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EUROPEAN U.S.S.R.

HEALTH AND SANITATION

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Chapter XI

HEALTH AND SANITATION

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110. INTRODUCTION

This chapter deals with environmental conditions which affect health, including water, sewerage, animals, plants, and food, and with public health administration, medical facilities, and diseases. The area covered is the European part of the U.S.S.R., extending from the Barents Sea and Beloye More (White Sea) to the Black and Caspian Seas, and from the Ural Mountains and Ural river to a line which would connect the Frisches Haff with the estuary of the Danube (river). This territory includes the entire European U.S.S.R. and contains the following political units: The European part of the R.S.F.R., the Ukrainian S.S.R., the White Russian S.S.R., the Karelo-Finnish S.S.R., the Moldavian S.S.R., the Estonian S.S.R., the Latvian S.S.R., and the Lithuanian S.S.R.

Water and sewerage systems, although present, are neither modern nor sufficient in number. The quantity of water available is abundant, because of the large rivers, numerous springs, and adequate rains and snow. European U.S.S.R. has some of the most fertile regions of the world, the Ukrainian S.S.R. being an example; and the supply of food in normal times is adequate. The canned food industry is in its infancy, but is growing rapidly and steadily.

Malaria-transmitting mosquitoes and sandflies are present in great numbers. The louse population is considerable, and there are innumerable pests, such as cockroaches, bedbugs, ants, and beetles. In the southeastern part of European U.S.S.R. the rodents and domestic animals constitute a reservoir for plague. This disease is transmitted by fleas, which abound in that region. The ticks in European U.S.S.R. are incriminated in the transmission of encephalitis. Dangerous animals include poisonous fishes and snakes, bears, wolves, foxes, and rabid dogs and cats.

Medical and public health services are almost entirely state controlled and supervised. The Soviet Union in 1941 had 130,348 physicians, 661,431 hospital beds for general medicine and surgery, 73,992 beds for psychiatric patients, and 141,873 maternity beds. The Narkomzdrav, or Ministry for Public Health, controls all the medical activities in the country.

The most important diseases of the Union are tuberculosis, malaria, and dysentery. Louse-borne typhus is still present, although much better controlled than ever before. The venereal disease rate has been considerably reduced in the last 25 years. There are still some small foci of trachoma, plague, and leprosy, particularly in the southeastern and central-eastern parts of European U.S.S.R.

In general, the Soviet Union has exerted strenuous efforts toward the solution of its health and sanitation problems and has attained some measure of success. The medical facilities of the country are still in the process of rapid growth.

111. ENVIRONMENT

Despite the vast extent of the Soviet Union, climatic conditions in large parts of the country have much in common. The situation is different near the Black Sea, across the Caspian Sea, and in the Far East, where winters are longer and precipitation lower than in the rest of the U.S.S.R. Occasional frosts which extend into the summer or come early in the fall, lack of adequate spring rainfall or ground moisture from melting snow, and drying winds foster crop uncertainties.

Only a few areas in the west and in the higher mountains receive more than 20 inches of rainfall. If it were not for the low summer temperatures and limited evaporation, very little of the entire country would be suitable for agriculture.

Changes of latitude and altitude are not always accompanied by corresponding climatic variations. For example, the yearly average temperature in Moskva (Moscow) is 3° F. lower than in Leningrad, which is 400 miles to the north, and winters in the delta of the Volga are colder than in the Gulf of Finland where the north wind brings warmer weather. Stations on the Azovskoye More (Sea of Azov) have the same January average as the northern coast of Kol'skiy Poluostrov (Kola Peninsula).

Winter is the predominant season. The frost-free period is only 90 to 120 days in the northern half of European U.S.S.R. In the central European area and the Ukraine, only 120 to 180 days of each year are frost-free. Snowfall is not heavy but, since thaws are rare in winter, snow accumulates and may be blown into formidable drifts. In the European part of the Union, except for the Ukraine, the snow persists for 100 to 200 days.

Summers are warm almost everywhere, with July isotherms extending east and west. Along the Arctic Coast long hours of sunshine raise the day and night monthly average temperature to 50°F. From Arkhangel'sk to Kiyev (Kiev), July temperatures are 60°F. to 68°F.; in the steppes they reach 75°F.

A. Water

The first water-supply systems were built in Moskva (Moscow) and Pushkin during the eighteenth century. The amount of water supplied by all systems in Russia during the eighteenth and nineteenth centuries was grossly inadequate and expensive to the consumer. Important changes did not take place until 1920.

In 1924 and 1926 the numbers of water-supply systems in operation were 278 and 325, respectively. The numbers of town inhabitants benefiting from municipal water-supply systems during these same years were 12.5 millions and 14.9 millions, respectively. Thus, the number of townspeople benefiting from municipal water-supply systems increased by 16 percent. On the other hand, the quantity of supplied water increased by 2% only, since the entire Russian water supply per 24 hours was 714,000 cubic meters (approximately 188,500,000 gallons) in 1926 as compared to 700,000 cubic meters (184,800,000 gallons) in 1924. The average water consumption of the individual as the result of urbanization seems, therefore, to have been reduced. It was 55.2 liters (14.57 gallons) per 24 hours in 1924, and 51.3 liters (13.54 gallons) in 1926. The low capacity of water production during this period in the U.S.S.R. can be judged by comparison with Chicago's water supply. The daily output of water in the entire U.S.S.R. was 714,000 cubic meters (188,500,000 gallons) in 1926, while for Chicago it was 3,200,000 cubic meters (844,800,000 gallons) per 24 hours in the same year. The safeness of the drinking water in those years, particularly river water, can be questioned seriously. The typhoid epidemic of 1926 was caused by the poor water system of the city of Rostov-na-Donu (Rostov-on-Don). For that reason a decree was issued which established a special body in charge of "zones of sanitary protection." By establishing zoning regulations for protection of reservoirs, this body had jurisdiction over the sanitary control of municipal water-supply systems and the sources from which those systems were fed.

For about 12 years before World War II municipal water supplies had been developing rather rapidly in volume and in potability. By the end of 1938, according to Soviet figures, 411 cities had central water systems with approximately 14,000 kilometers (8,700 miles) of water mains. This indicates that the majority of Russian cities had central water supplies, as the number of cities in the U.S.S.R. with populations exceeding 50,000, according to the census of January 1939, was only 174. The third Five-Year Plan proposed to increase the daily water supply to 5.25 million cubic meters (1,386 million gallons) by 1942. Moreover, two years before the war (1939) legal standards were finally set for the minimum requisites of water for drinking and household purposes.

During the war, expansion of water supply and maintenance of existing water systems continued in the unoccupied cities, except in a few areas. In Moskva (Moscow), for example, 54 kilometers (33.5 miles) of water mains were laid during 1942 and 1943. No breakdowns in main supply during 1941-1943 were reported. In the towns of the Volga, which had to absorb many refugees and evacuees, water delivery doubled during the war. On the whole, no serious threat to health was traced to the functioning of water systems in the unoccupied U.S.S.R. during the war period. The following cities are among those which received new water systems in the past 15 or 20 years: Bronnitsy, Gor'kiy (Gorki), Ivanovo, Krasnodar, Mozhaysk, and Murmansk. The following cities, among others, had their water-supply systems improved: Bukhara, Leningrad, Moskva (Moscow), Rostov, Stavropol', and Stalingrad.

The very few rural water-supply systems always were poor. Villages obtain their water almost exclusively from wells, the majority of which are of wooden construction and of inferior design. The Russian Government has initiated an ambitious program of water improvement in rural areas. Thus, the building of concrete wells has been encouraged, particularly around Moskva (Moscow) and Pskov. During the second Five-Year Plan, 318 new rural water mains, 99 of which are in the Crimea alone, were under construction. A great improvement in rural water supply may be anticipated in the near future, even if temporarily interrupted by the war.

In the entire U.S.S.R. in 1936 water was obtained from various sources in the following proportions: rivers 35.2%; springs 20.7%; subsoil water (wells) 10.5%; artesian water 13.3%; subsoil spring water 6.7%; artesian-spring water 4.7%; the remaining 8.9% from combined sources. These percentages are not constant but change continuously; nevertheless, rivers continue to be predominant as sources of water supply in the Soviet Union. The European U.S.S.R. is abundantly equipped with such natural sources of water supply.

B. Waste disposal

The first sewerage system in the U.S.S.R. was built in Odessa in 1862; sewerage systems for the cities of Kiyev (Kiev), Moskva (Moscow), Rostov, and Khar'kov followed in the years 1894, 1898, 1906, and 1914, respectively. As late as the year 1930 there were only about 42 cities equipped with sewerage systems, which represented an almost insignificant number compared to the number of Russian cities without them.

The number of buildings served by the canalization system in 1928 was very small. Thus, in Moskva (Moscow) 9,612 out of 29,449 dwelling units were connected with the sewerage system; in Gor'kiy (Gorki), the number was 641 out of 9,199; in Rostov-na-Donu (Rostov-on-Don) 2,014 out of 16,170; in Sevastopol' 706 out of 5,749; in Kiyev (Kiev) 4,582 out of 17,209; and in Khar'kov 1,648 out of 21,418.

The control and planning of major canalization projects is partly in the hands of the NKVD (Department of Interior) and partly under the supervision of the Narkomzdrav. Minor projects are planned and controlled by the individual city or town councils. Rural communities do not have any sewerage systems at all, and waste disposal methods there are still extremely primitive.

The sanitary position of Soviet cities on the eve of World War II apparently had a background of inadequate development followed in 1925 by large-scale expansion, including improvements in standards and regulations. In spite of its extension, sanitation lagged behind growing urban needs.

By the end of 1938, approximately 107 cities had sewerage systems with about 5,000 kilometers (3,100 miles) of sewage mains. The most striking increase was in the number of cities equipped. Between 1928 and 1938 their number had more than doubled, but it should be noted that the total of 107 reported for 1938 represented only three-fifths of the number of cities with a population of more than 50,000.

An example of the increasing official attention paid to sanitation was shown in 1937 at the All-Union Conference which recommended municipally controlled disposal of sewage. At about the same time sanitary facilities were unified within the administrative system of some cities where the same department became responsible for rubbish collections, removal of wastes, general sanitation of the city, street cleaning and washing, snow removal, and

cemetery maintenance, as well as the preparation and publication of technical instructions and studies in these fields.

During World War II insanitary conditions were rather prevalent, although, with the favorable turn of the war, serious efforts were reported to have been made to improve unsatisfactory conditions all over the Soviet Union. There are no data available on either the destruction or reconstruction of the sanitation systems in the Soviet Union.

C. Animals

(1) Vectors of disease

(a) Mosquitoes.—Mosquitoes are numerous in European U.S.S.R. Positive identifications recorded for the region include 9 species of *Anopheles*, 27 of *Aedes*, 7 of *Culex*, and 11 of other genera. Many of the 54 species are numerous enough to become serious pests in some localities, but the only important vectors of disease in European U.S.S.R. are five species of *Anopheles* responsible for the spread of malaria. The breeding and other habits of these species are described below.

The larvae of *A. maculipennis maculipennis* are present, particularly in fresh sunlit water, but also in other types of standing water. The larvae avoid thick horizontal vegetation such as *Lemna* and prefer thin and vertical vegetation such as *Ranunculus, Myriophyllum,* and *Ceratophyllum*. The adult mosquito is mainly active after sunset and before sunrise. The species appears in April and is most abundant from August to September. The females start hibernation at the end of September.

The larvae of *A. labranchiae atroparvus* are found in brackish water, coastal marshes, the fresh water of rice fields, and upland streams. The adults enter houses in large numbers. They bite animals but prefer human blood. This species is an important vector of malaria.

The larvae of *A. messeae* thrive in cool, standing bodies of fresh water, and in large inland river valleys, lakes, and marshes. Adults prefer the blood of animals to that of human beings. Hibernation occurs in barns and houses. The species is believed to be an important vector of malaria.

A. sacharovi, because of its anthropophilic tendency, is an important vector. It feeds on man and domestic animals, and breeds in coastal marshes, even if strongly brackish, or in inland marshes which are open to sunlight in midsummer. Adults enter human habitations and bite man freely at night.

A. hyrcanus hyrcanus is considered to be a minor vector of malaria in European U.S.S.R. The larvae of this species are found not only in marshes and rice fields but also in ponds and other collections which are exposed to the sun. Adults are especially active at sunset and sunrise.

In the malarious regions of European U.S.S.R. (Ukraine, Lower Volga region, Crimea, Moldavia) it has been established that there are definite characteristic seasonal fluctuations, sometimes considerable, among the various species of *Anopheles*. Two distinct maxima are noticeable for *A. labranchiae atroparvus,* one in April and May, and a greater one around September. The species is considered a "warm" type of *Anopheles* which cannot withstand the cool nights of springtime. The autumnal increase is coincident with the disappearance of *A. messeae,* which commence to hibernate around this time of the year. In summertime in the vicinity of Odessa *A. labranchiae atroparvus* slightly outnumbers *A. messeae.*

The seasonal quantitative changes of the different types of *Anopheles* can be studied by the typical "flight curves." These can be: 1) a pure type of flight curve representing flights of *A. messeae* only; 2) a pure type of flight curve representing flights of *A. labranchiae atroparvus* only; and 3) a mixed type of curve due to flights of both *A. messeae* and *A. labranchiae atroparvus.*

The *A. messeae* type of flight curve is characterized as low in May with the peak in June and July. The curve descends in August and reaches its lowest point around the last half of September, when *A. messeae* retires for hibernation.

The flight curve of *A. labranchiae atroparvus* has two peaks, one in July and a second one in September. The September peak often is higher.

In the third curve which represents the flights of mixed populations of *Anopheles,* there is no autumnal (September) rise because in mixed populations *atroparvus* is less abundant. In Nikolayev (Nikolaev) for example, during 1937 *A. messeae* outnumbered *A. labranchiae atroparvus* about two to one.

The morbidity rate of malaria noted in different regions shows a definite peak in the second and third quarter of the year. This corresponds also to the flight curve of *Anopheles* which always starts to rise in April to reach its peak between June and September and falls to its low in the last and first months of the year.

(b) Flies.—Flies are extremely common in the Soviet Union and represent a serious health problem. Their numbers can at times increase to myriads, and reports from German occupation forces in White Russia stated that "it was impossible to avoid flies and that flies would creep into the mouths of soldiers, or cover completely their faces, food, etc." Sandflies (family Psychodidae) are vectors of sandfly fever and certain flies like *Sarcophaga carnaris* and species belonging to the families of Oestridae and Gasterophilidae cause different forms of myiasis.

Some 39 species distributed among 15 genera in 9 families have been recorded for the U.S.S.R.

FAMILY AND SPECIES	GEOGRAPHIC DISTRIBUTION
Calliphoridae:	
Calliphora erythrocephala	Entire European U.S.S.R.
Do. vomitoria	do.
Lucilia caesar	do.
Gasterophilidae (gadflies):	
Gasterophilus intestinalis	Entire U.S.S.R.
Do. veterinus	do.
Do. pecorum	do.
Hypodermatidae (gadflies):	
Hypoderma bovis	Entire U.S.S.R.
Do. lineata	do.
Muscidae (common flies):	
Stomoxys calcitrans	Entire European U.S.S.R.
Musca domestica	do.
Fannia canicularis	do.
Oestridae (gadflies):	
Rhinoestrus purpureus	Entire U.S.S.R.
Piophilidae:	
Piophila casei	Entire European U.S.S.R.
Psychodidae (sandflies):	
Phlebotomus chinensis	Crimea
Do. major	do.
Do. minutus	do.
Do. papatasii	do.
Do. perfilievi	do.
Do. sergenti	do.
Do. sergenti var. alexandri	do.

FAMILY AND SPECIES	GEOGRAPHIC DISTRIBUTION (Continued)
Sarcophagidae:	
Sarcophaga carnaria	Entire European U.S.S.R.
Do. haemorrhoidalis	do.
Wohlfahrtia magnifica	Southern European U.S.S.R.
Tabanidae (horse flies):	
Tabanus tarandinus	Tayga, northern regions
Do. fulvicornis	Tayga and forests
Do. tropicus	do.
Do. montanus	do.
Do. solstitialis	Forests and steppes
Do. bovinus	do.
Do. bromius	do.
Do. peculiaris	Around rivers in half-deserts
Do. erberi	do.
Chrysops caecutiens	Entire European U.S.S.R. except deserts
Do. relictus	do.
Do. quadratus	Entire European U.S.S.R. except deserts
Do. nigripes	Tayga
Chyrsozona pluvialis	Entire European U.S.S.R. except deserts
Do. crassicornis	Tayga and forests
Do. italica	Forests and steppe forests

(c) Lice.—The usual lice that infest man are found in the U.S.S.R. They always have claimed a prominent place in the history of Russian wars, revolutions, postwar periods, migrations, etc., which were associated with crowded living conditions and poor sanitation. The species found are: *Pediculus humanus capitis, Pediculus humanus corporis,* and *Phthirus pubis.* The most important diseases spread by lice are typhus fever, relapsing fever, and trench fever.

(d) Fleas.—Approximately 35 species of fleas have been identified in European U.S.S.R. Of these, *Xenopsylla cheopis* and species of *Ceratophyllus, Ctenophthalmus, Ctenopsyllus,* and *Meropsylla* are important as vectors of plague and typhus. However, flea-borne typhus is rare in European U.S.S.R.

(e) Other insects.—Cockroaches, bedbugs, and ants may serve as mechanical vectors of disease. Cockroaches and ants transfer organisms by crawling over filth and food indiscriminately. While the ability of the bedbug to transmit disease is debatable, the ingestion or crushing upon the skin of infected bedbugs may give rise to infection in man. The more numerous species of cockroaches include *Blatta orientalis, Blatella germanica,* and *Periplaneta americana.* The bedbug, *Cimex lectularius,* is found throughout the U.S.S.R.

Ants are a very considerable nuisance to man and animal. The following types are found in the territory of the European U.S.S.R.: *Monomorium pharaonis, Tetramorium caespitum,* as well as *Iridomyrmex humilis* and others. *Monomorium pharaonis,* imported to Europe from tropical climates, is mainly found inside dwellings, particularly in bakeries, restaurants, hotels, and laboratories. Sometimes these ants become particularly destructive to the deep foundation of a dwelling and increase their population to such an extent that the dwelling becomes uninhabitable. *Monomorium latinode* can harbor the live cholera bacillus for eight hours, and *Monomorium destructor,* which devours rats that died from plague, spread this disease while the ant itself remains immune to it.

(f) Ticks and mites.—The importance of ticks as vectors of disease in European U.S.S.R. is manifested in the transmission of tick-borne encephalitis. *Ixodes persulcatus,* whose larvae also may be infected with encephalitis virus, is the main vector; *Dermacentor sylvarum, Haemaphysalis concinna,* and *Haemaphysalis japonica* are less important. These species are found in thick uncultivated forests. They attack man, cattle, horses, sheep, pigs, dogs, and wild rodents. The geographical distribution of ticks in the U.S.S.R. is shown in FIGURE XI-1.

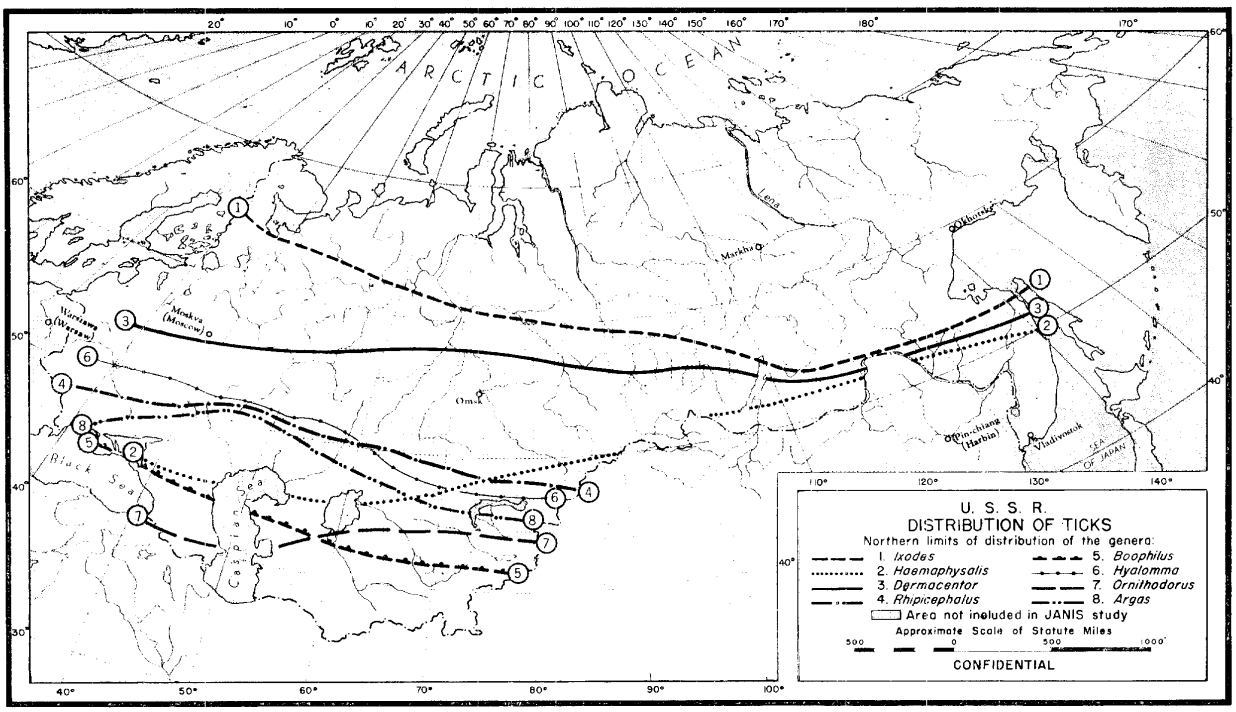

FIGURE XI - 1. *Geographical distribution of ticks.*
Northern limits of the genera represented in the U.S.S.R.

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The itch mite, *Sarcoptes scabiei,* and the follicle mite, *Demodex folliculorum,* are common throughout the European U.S.S.R. The importance of mites as vectors of rickettsial infection has not been established in this area. Russian authors consider it as almost nonexistent.

(g) Mollusks.—Snails, clams, and other mollusks are present in the European part of Soviet Russia. The Russian literature does not indicate that they are important as hosts for flukes or other parasites.

(h) Rodents.—The rodents are the most important group of mammals associated with spread of disease, particularly plague and certain forms of typhus. This applies especially to the southeastern part of European U.S.S.R., but also to the rest of the Soviet Union. Mice, rats, jerboas, marmots, rabbits, polecats, and weasels are some of the most common rodents of the area. The genus *Citellus* is represented by three species, namely *Citellus citellus, Citellus suslicus,* and *Citellus pygmaeus. Marmota bobak* is also present. The family Gerbillidae is represented by two species, *Pallasiomys erythrourus* and *Meriones tamaricinus.*

Mus musculus, Lagurus lagurus, Microtus socialis, and *Microtus arvalis* have periodic mass migrations which sometimes do not reach human habitations but terminate in the steppes of southeastern U.S.S.R.; nevertheless, they represent an abundant reservoir of plague.

(2) Dangerous animals

The dangerous animals of European U.S.S.R. include two species of venomous snakes, certain fishes, and wild animals.

(a) Reptiles.—The only poisonous serpents of European U.S.S.R. are two small vipers, true vipers or members of the family Viperidae. Both are members of the same genus, *Vipera.* There are no pit vipers.

The common viper or adder, *Vipera berus,* seldom grows longer than twenty-four inches. The color is variable, ranging through gray, olive, and brown, sometimes to reddish. The color pattern may be uniform or dotted with small spots. A bold, zigzag pattern of dark hue usually extends the length of the back, thus distinguishing it from the harmless snakes. This species has an X-shaped mark at the back of the head, like a St. Andrew's cross. Another viper, *V. renardi,* is particularly characteristic of the southern parts of the European U.S.S.R.

The bite of these vipers is not always fatal; the venom is reported to be hemotoxic.

(b) Dangerous and poisonous fishes.—The fishes which are found off the shores of the various seas and lakes of European U.S.S.R. are dangerous only in their ability to injure by cutting or puncturing. The *Trachinus vipera* (weaver) is frequently present in the Baltic Sea. The Black Sea contains the following species: *Dasyatis pastinaca* (sting ray), *Scorpaena porcus* (scorpion fish), and *Trachinus draco* (weaver).

Some of the river fishes may prove deadly upon ingestion because they contain an alkloid. The Dnepr (Dnieper), Volga, and Kuban' rivers contain species of *Barbus* and *Schitzothorax* (minnows) which may be poisonous.

From 50% to 100% of the perch, bass, burbot (eelpout), pike and pike-perch in the estuary of the Neva are infected with *Diphyllobothrium latum.*

(c) Mammals.—The usual domestic animals, such as horses, cattle, dogs, cats, donkeys, and camels, can all become quite important as sources of infections. This applies particularly to the Volga valley and the steppe regions of southeastern European U.S.S.R. where most of these animals may become a source of infection for plague.

There are still many rabid dogs, cats, and wolves in the country, and about 70,000 people are bitten every year. The European wolf, *Canis lupus,* is found in the north, and the bear, *Ursus arctos,* in the tayga region. The fox is also encountered in the northern regions.

(3) Pests

Some of the insects mentioned previously, such as ants, bedbugs, and cockroaches, may become pests when sufficiently numerous. Other pests include blackflies, cockchafers and other beetles, spiders, and scorpions.

(a) Blackflies.—Blackflies appear in great numbers and become an almost unbearable nuisance, particularly in the southern parts of the U.S.S.R. Among the species found, two particularly are ubiquitous; namely, *Simulium vittatum* and *Simulium reptans.* When they become very numerous, these species are often so annoying that the working capacity of the people is reduced.

(b) Beetles.—Altogether 28 species of beetles, distributed among 9 families, have been identified in European U.S.S.R. These families are: Anobiidae, Cleridae, Curculionidae, Dermestidae, Histeridae, Ptinidae, Scarabaeidae (cockchafers), Silphidae, and Tenebrionidae.

Some of these Coleoptera are pests only because they damage food, clothes, and furniture. Others are intermediate hosts for certain types of worms, particularly nematodes. Many are agricultural pests.

(c) Spiders.—Spiders are universally present. *Latrodectus tredecimguttatus* (a species of Black Widow) is frequently found on the beaches of the Azovskoye More (Sea of Azov), Caspian Sea, Black Sea and in the Ukraine south of Khar'kov. This spider is most active in summer, especially in thinly inhabited regions where there is abundant grass vegetation. Hay used as a spread on which to sleep often contains spiders. Severe local and general symptoms result from the bite of this species, but a fatal result has never been reported.

Another spider found in southern European U.S.S.R is the *Trochosa singoriensis,* often called the South Russian Tarantula.

(d) Scorpions.—*Buthus cupeus* is found in the area of Astrakhan' and in the Volga Valley. *Euscorpius italicus* lives along the shores of the Black Sea, and *Euscorpius tauricus* populates the Crimea, particularly the area around Sevastopol'. The sting of these scorpions, though painful, is said not to be fatal.

D. Plants

Scant information has been found concerning poisonous plants in European U.S.S.R. The darnel, *Lolium temulentum* (family, Gramineae), is subject to infection of its inflorescence by the fungus ergot, the ingestion of which by man or animal may be fatal. Any of the pollen-producing trees and grasses may be sources of allergic reactions in susceptible individuals.

E. Food

(1) General

In the U.S.S.R., the supplying of food is a public service. The state feels responsible for the production and distribution of food to individuals according to their needs. An attempt is made to provide the entire population with a rational diet designed to conform to physiological needs and hygienic standards. The health authorities play an important part in the solution of the food problem.

The food situation has always been a very serious matter in the U.S.S.R. Famines occurred about once in every 10 years, and serious crop failures about once in every 5 years.

In the nineteenth century alone, famines occurred in the years 1822, 1833, 1840, 1873, 1880, 1883, 1891, 1892, 1898, and 1899. The disturbance created by civil war, foreign intervention, and boycott, after the Russian Revolution, resulted in the disastrous famine of 1920 to 1922 which cost the country numberless human lives and created endless suffering. The famine caused mass migration in a search for food and contributed to the spreading of epidemics.

The Soviet Government decided to solve the problem of food and famine by collectivization and mechanization of agriculture. This proved to be a failure at the end of the first Five-Year Plan, and in 1932 the U.S.S.R. experienced a disastrous famine again. The failure was caused by lack of cooperation on the part of the "kulaks" (rich peasants), who openly sabotaged the government's plan. However, in 1933 all forces were mobilized to remedy the kulak situation, and since then the U.S.S.R. has been having record crops and no major food problems except those resulting from war and drought.

Bread is one of the most important foodstuffs of the Russian. The government reduced the export of grain, so as to make more bread available for the population. In addition, in peacetime, the government attempts to keep a reserve equal to a full year's supply for emergencies such as war or crop failure. Mechanized bakeries were instituted. The Commissariat of Food Industry controlled about 170 mechanized bakeries in 1936, exclusive of local establishments. In 1937, 78% of all bread consumed in the Union was produced mechanically. The whole process is under strict medical supervision, and laboratories are attached to the bread factories to test ingredients. The workers are subject to medical control each day as a matter of routine.

Meat is rather scarce in the Soviet Union. A great deal of livestock was lost during the years when the farms became collectivized. The number of sheep and goats was particularly low; pigs were more numerous. This was the situation in 1937. The war undoubtedly has created more critical conditions as a result of retreat and "scorched earth" policy.

The meat consumption of the population in 1937 was higher than in preceding years. There are about 40 meat-packing plants (government controlled) in European U.S.S.R., the largest of which is the "Meat Combinat" in Moskva (Moscow) where 1,250 head of cattle, 3,500 pigs, and 1,500 sheep are slaughtered daily, producing a total of 500 tons of meat daily. Forty-three veterinarians are responsible for the quality of the products of this factory.

Fishing is another extremely important branch of the Soviet food industry. Both seas and rivers are very rich in fish. However, the chief center of fishing is not in the European, but in the far eastern part of the Union. Fisheries, like farms, are collectivized. Fish is sold to the population fresh, frozen, dried, salted, and canned.

Previous to the Soviet regime canning was an unknown industry in Russia. In 1936 the U.S.S.R. produced about 600 million cans of meat, vegetables, fruit, tomatoes, and milk, and about 225 million cans of fish.

Fresh milk is being delivered to dairies in the larger cities, where it is analyzed and tested by chemists and physicians. About 75% of it is delivered in pasteurized form. The ice cream industry is small; total Russian ice cream production in 1936 was 15,000 tons. The ice cream production is under strict medical supervision. Butter production is divided among mechanized factories and homes. Complete figures can not be reported because no information on the home-made butter output is available.

In the production of beet sugar the Soviet Union ranked first in the world before World War II, and the output was of such magnitude that sugar could be exported in increasing quantities.

Fruits and vegetables are scarce in the cities because of transportation difficulties; they are abundant in rural regions. Citrus fruits are very scarce throughout the U.S.S.R. Potatoes, cabbage, cucumbers, melons, and strawberries are abundant. Tea still must be imported, but in increasingly smaller quantities. Coffee is imported, but is not a popular beverage.

(2) Collective feeding

Collective feeding is a widespread practice in the Soviet Union since it is considered the best method of providing a correct diet for the people. It is believed to contribute to the welfare of workers as well as to the increase of their productivity. Every large working place, factory, office, or school has its dining hall. Collective meals are the rule in state farms and are becoming increasingly popular on collective farms. The direction and supervision of collective feeding is in the hands of Narpit (Nardonoe Pitanie: People's Nutrition). It consists of representatives of various government departments involved, such as Agriculture, Food, Internal Trade, and Public Health. In 1931 collective feeding embraced 42.8% of all industrial workers, 25% of office employees, and 80% of university students.

The scientific foundation for collective feeding is promulgated by the Central Institute for Nutrition. Its program is the study of nutrition of man in health and illness. It has departments of physiology and biology, food hygiene, cooking, diabetic-therapeutic nutrition, nutrition of mothers and infants, education and training of technical staffs, and economics. It not only has laboratories, but also an infirmary with 120 beds.

The nutritional standards worked out by the Institute are outlined in TABLE XI-1.

TABLE XI - 1

OPTIMAL DAILY FOOD STANDARDS

Groups	Protein	Fat	Carbo-hydrates	Total calories
	Grams*	Grams	Grams	
Workmen and residents of cities:				
1-3 years	52	54	200	1,530
4-7 years	72	57	300	2,060
8-13 years	83	52	380	2,380
14-18 years	118	60	536	3,250
Adults	120	108	525	3,644
Maximum for very heavy work	...	...	...	4,300
Rural districts:				
Average adults	115	96	592	3,800
Workmen in over-heated premises	130-150	...	...	...

* 1 gm.=.0352 oz. (avoir.).

In rural districts more carbohydrate and less protein are given than in cities. Twenty percent of the protein, according to the Institute, should be animal protein. Vitamins ordinarily should not be added to the food. However, in the northern districts where the diet is deficient, it may become necessary to add them. Leningrad has two factories producing vitamin A and vitamin C.

(3) Food sanitation

The supervision of sanitary conditions in large restaurants and kitchens attached to factories is very strict.

The same applies to bakeries and canneries. Workers must bathe and wash thoroughly before starting their daily work. The bathing facilities (showers and baths) are attached to the food plant or restaurant. This ideal condition of sanitation is found, however, only in large industrial centers and large cities.

112. PUBLIC HEALTH AND MEDICAL FACILITIES

A. Public health organization

(1) Republic

The public health organization of each republic is headed by the Narkomzdrav (NKZ) (People's Commissariat for Public Health), divided into a number of departments (FIGURES XI-2 and XI-3). The Narkomzdrav controls all health work in the republic—preventive, diagnostic, and curative. It also controls medical education, medical research, and medical industries. The administrative organization is as follows:

1) People's Commissar of Public Health
2) Two vice-commissars of public health
3) Collegium, consisting of:
   Commissar
   Vice-commissars, each one of which acts as chief sanitary inspector for his oblast or kray
   President of medical workers' union
   Head, bureau of finance, commissariat for public health
   Peasant delegate
   Planning commission, to work out details of Collegium's policies and plans
4) Scientific medical council

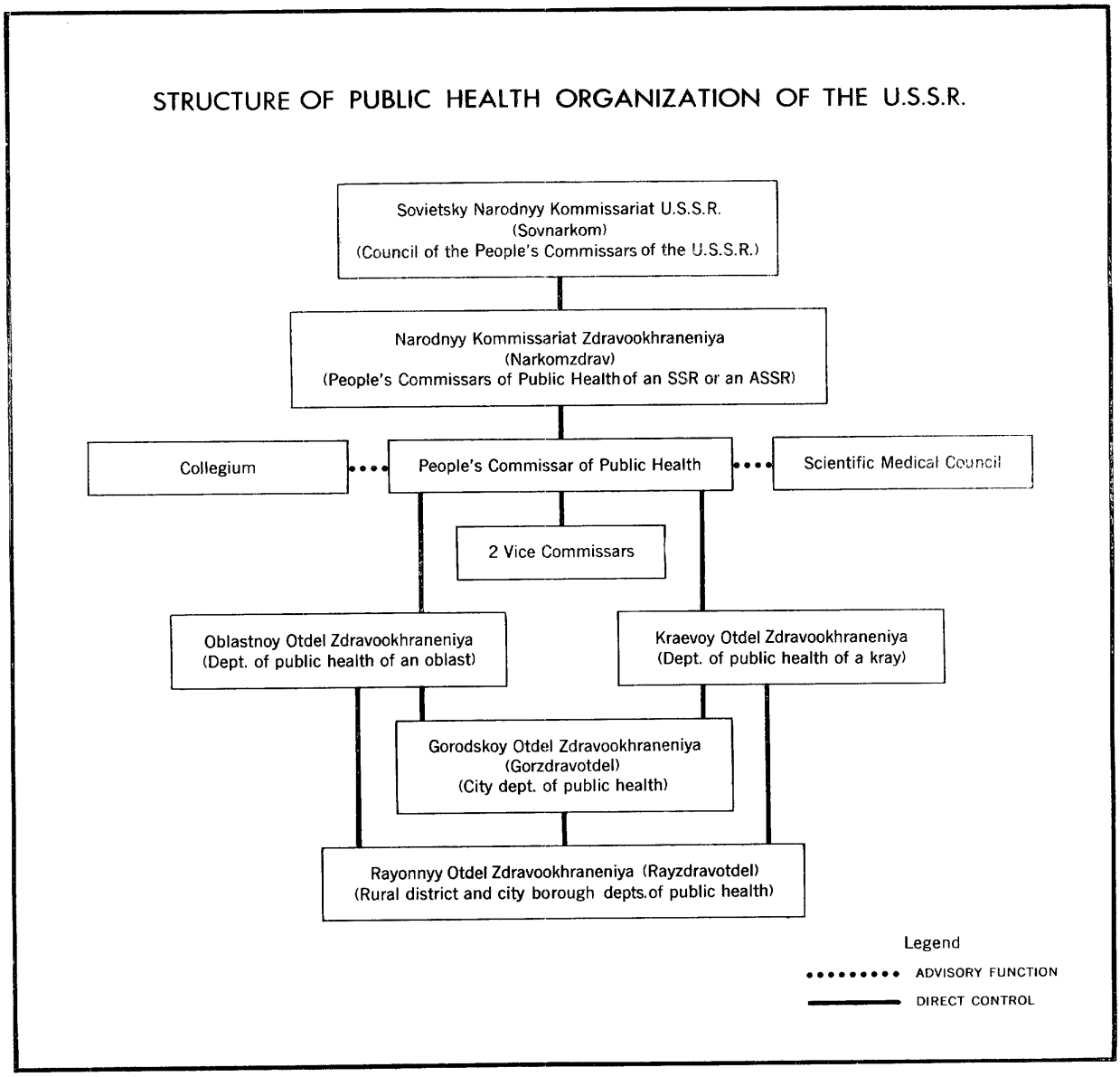

FIGURE XI - 2. *Structure of Public Health Organization, U.S.S.R.*

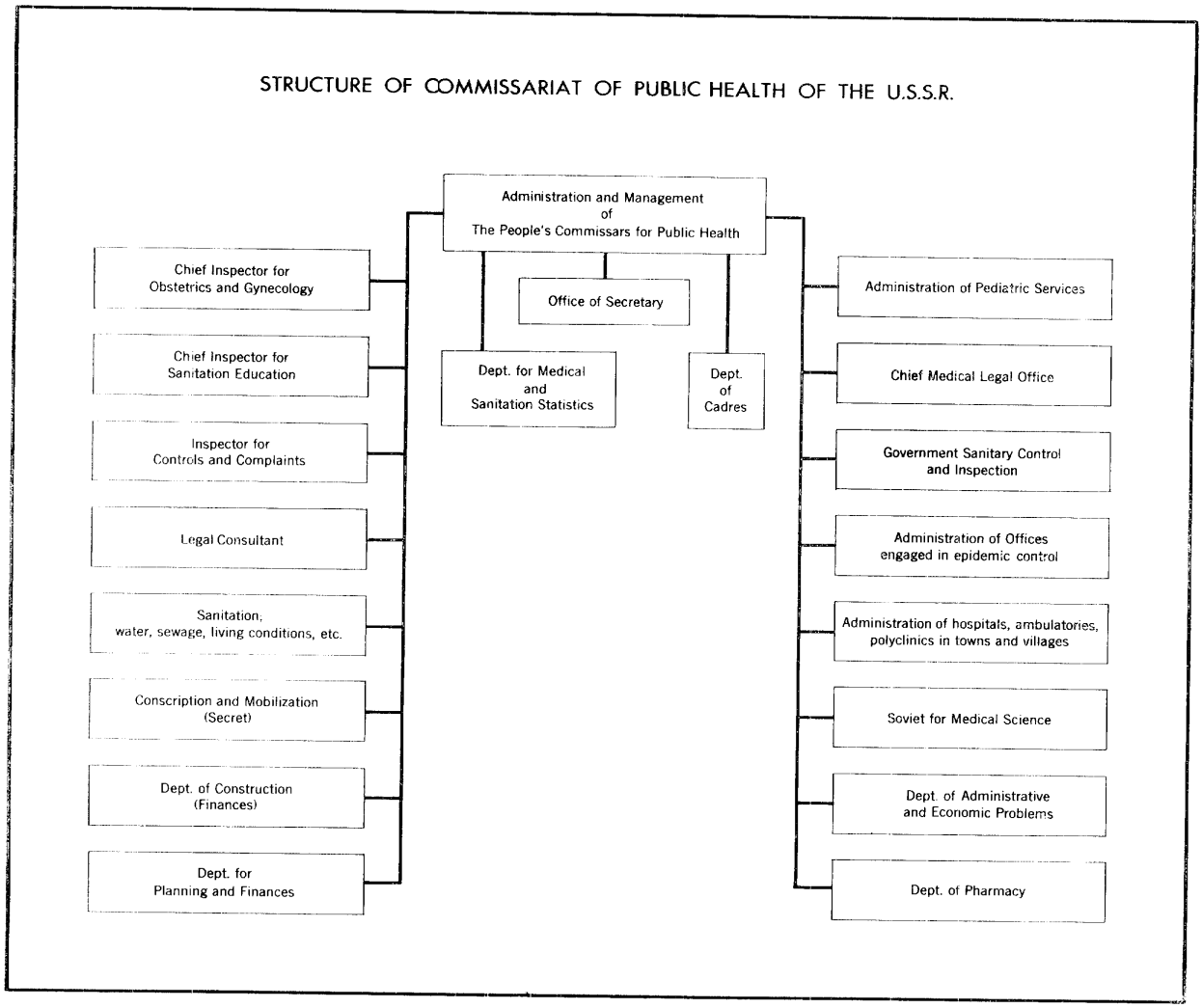

FIGURE XI - 3. *Structure of Commissariat of Public Health, U.S.S.R.*

(2) Oblast (territory) and kray (region)

Each oblast and kray has its own narkomsdrav in charge of its own department of health. The Department carries out policies and plans laid down by the narkomzdrav, controls health departments of cities (gorzdravotdel), and controls health departments of rural districts (rayzdravotdel).

(3) Rayon (rural districts and city boroughs)

Each rayon has a department of health (rayzdravotdel) subject to the respective oblast or kray department of health (FIGURE XI-4). The rayon department of health controls medical institutions within the limits of the rayon. The administration includes a rayon inspector of public health, and, in cities, one sanitary inspector to every 25,000 inhabitants, under the jurisdiction of chief sanitary inspector for the oblast or kray.

(4) Village

Village health matters are administered by the selosoviet (village soviet), which has the following functions in relation to public health.

Supervision of all hospitals in selosoviet budget.
Organization of sanitation inspection.
Control of venereal diseases.
Teaching of personal hygiene.
Development of physical culture.
Appointment of trustees for insane persons.

The selosoviet has the following functions in relation to social insurance.

Keep register of insured persons.
Disburse benefits.
Form associations (artels) of invalids.
Place war veteran invalids in groups for collective farming.
Appoint trustees for deaf, dumb, and blind.

(5) Commissariats of Transportation and Defense

The Commissariats of Transportation and of Defense have subsidiary health administrations independent of the Commissariat for Public Health. The Commissariat of Defense provides health and medical service for the army, and navy.

B. Hospitals and medical institutions

(1) Hospital facilities

Hospital facilities were inadequate in Tsarist Russia. Though considerably improved, hospital facilities in the

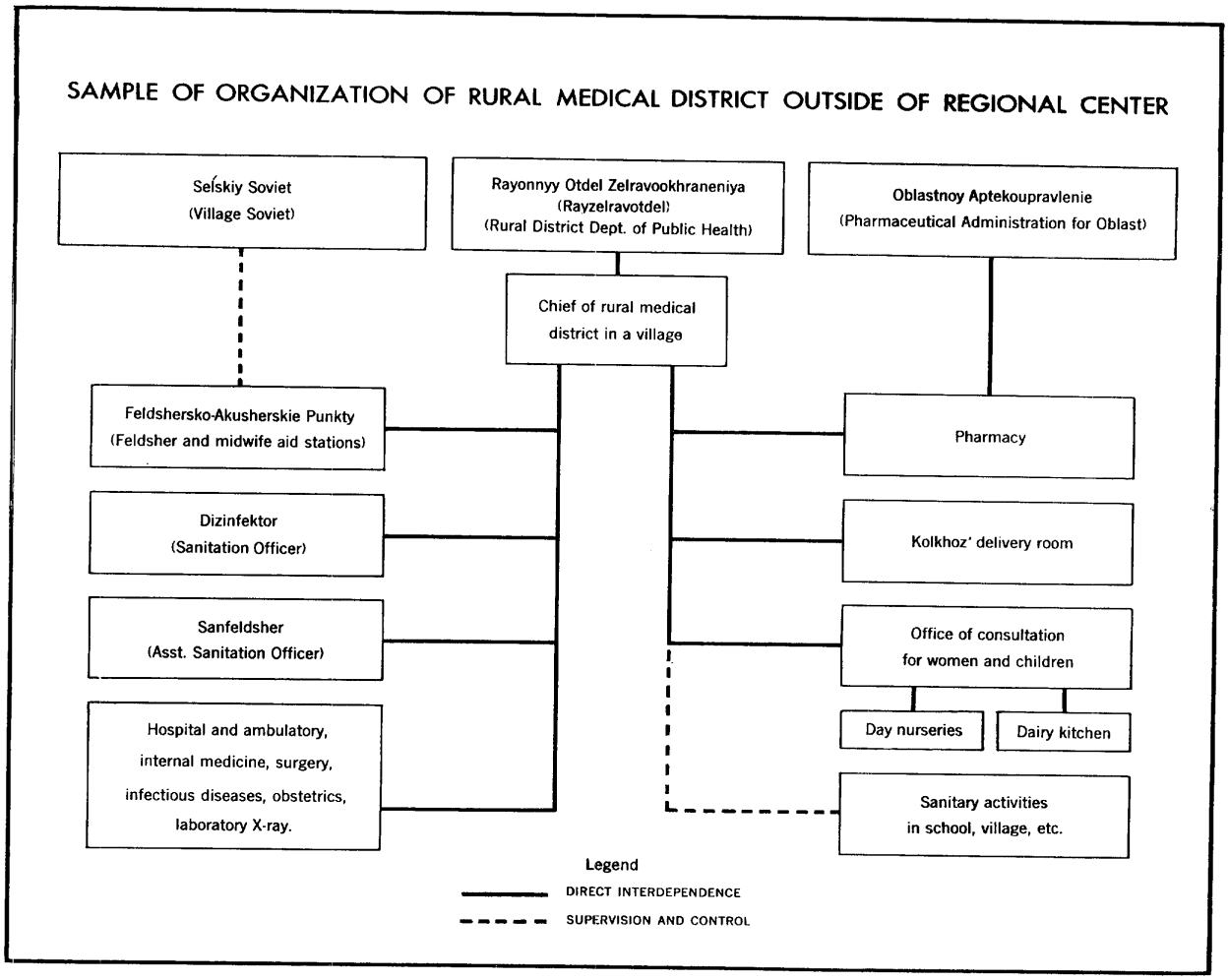

FIGURE XI - 4. *Rural Medical District.*
Sample of organization outside of regional center.

U.S.S.R. are poor by American standards even today. Certain diseases and services have received special consideration because they were completely neglected in pre-Soviet Russia. The number of beds has been increased more rapidly for tuberculosis, venereal diseases, and obstetrics than for other specialties.

(a) Hospital beds.—The total bed capacity of hospitals exclusive of sanatoria and health resorts was 185,374 in Tsarist Russia (1913). This number was increased in 1941 to 877,296 (according to another source, to 710,000). The Five-Year Plan which was started in 1945, provides for a further increase to 985,000 beds by 1950.

Of the 877,296 hospital beds accounted for in 1941, 491,543 served cities and 169,888 were located in rural communities; 73,992 beds were set aside for psychiatric cases and 141,873 beds were located in maternity hospitals. These numbers do not include the beds of the various sanatoria, permanent and seasonable nurseries, dispensaries, and emergency agencies.

Of the 491,543 beds in cities of the U.S.S.R. in 1941, the R.S.F.S.R. had 320,283 beds, the Ukrainian S.S.R. 88,759, the White Russian S.S.R. 15,731, the Karelo-Finnish S.S.R. 1,775, and the Moldavian S.S.R. 861. The greatest relative increases in bed capacity took place in the White Russian S.S.R. and Moldavian S.S.R. (TABLE XI-2). The number of hospital beds in the U.S.S.R. per 1,000 population in cities rose from 3.9 in 1913 to 8.2 in 1941. The ratio in the R.S.F.S.R. was 8.2, in the Ukrainian S.S.R. 7.5, in the White Russian S.S.R. 10.9, in the Karelo-Finnish S.S.R. 9.1, and in the Moldavian S.S.R. 11.5 per 1,000 population in 1941 (TABLE XI-2). The Caucasian republics are not mentioned individually; they are included in the numbers referring to the U.S.S.R. The numbers referring to the R.S.F.S.R. include Siberian republics also.

Of the 169,888 beds in rural hospitals in the Soviet Union in 1941 approximately 114,094 were located in the R.S.F.S.R., 30,726 in the Ukrainian S.S.R., 3,069 in the White Russian S.S.R., 1,144 in the Karelo-Finnish S.S.R., and 277 in the Moldavian S.S.R. In 1913 the number of hospital beds in rural localities was small, but by 1941 it had shown some increase (TABLE XI-2). The most impressive developments again are seen in the southern European constituent republics. In rural localities the number of beds per 1,000 population was 0.44 in 1913 and rose to 1.47 by 1941 for the entire territory of the U.S.S.R. The individual republics in 1941 ranked in the following order with respect to beds per 1,000 population: The Karelo-Finnish S.S.R. with 2.69, the R.S.F.S.R. with 1.58, the Ukrainian S.S.R. with 1.51, the White Russian S.S.R. with 0.73, and the Moldavian S.S.R. with 0.48 (TABLE XI-2).

TABLE XI - 2

NUMBER OF HOSPITAL BEDS IN U.S.S.R., 1913 TO 1941

U.S.S.R. and Constituent Republics	In cities 1913	1928	1932	1938	1941	Beds per 1,000
R.S.F.R.	65,467	115,792	176,697	293,925	320,283	8.2
Ukrainian S.S.R.	19,556	21,122	42,289	82,963	88,759	7.5
White Russian S.S.R.	2,307	4,515	7,959	14,364	15,731	10.9
Karelo-Finnish S.S.R.	305	559	1,097	1,576	1,775	9.1
Moldavian S.S.R.	64	86	147	786	861	11.5
Remaining republics	5,524	16,440	27,969	57,080	64,134	
U.S.S.R.	93,223	158,514	256,158	450,694	491,543	8.2
	In rural localities					
R.S.F.S.R.	38,653	42,859	84,007	104,452	114,094	1.58
Ukrainian S.S.R.	8,668	11,269	20,524	27,720	30,726	1.51
White Russian S.S.R.	646	980	1,126	2,481	3,069	0.73
Karelo-Finnish S.S.R.	132	241	380		1,144	2.69
Moldavian S.S.R.	156	162	195		277	0.48
Remaining republics	832	3,719	9,843	18,476	20,578	
U.S.S.R.	49,087	59,230	116,075	153,129	169,888	1.47

A certain percentage of beds in the hospitals is devoted to certain specialties. As shown in TABLE XI-3, obstetrics and pediatrics have gained in importance, a fact which reflects the increasing attention being paid to care for mother and child. On the other hand, the number of beds devoted to dermosyphilopathy had decreased very considerably, which would correspond to the Russian claim that the venereal disease rate has been lowered as compared with prior years.

TABLE XI - 3

PERCENTAGE OF CITY HOSPITAL BEDS DEVOTED TO CERTAIN SPECIALTIES, 1928 TO 1941

Republics	Year	SPECIALTIES Internal Medicine	Surgery	Obstetrics	Gynecology	Dermosyphilopathy	Pediatrics	Neuropsychiatry	Ophthalmology	Otorhinolaryngology	Others
R.S.F.S.R.	1928	20.2	19.4	5.4	6.5	6.6	3.3	4.1	2.9	1.7	29.9
	1941	16.2	16.4	15.1	5.6	2.2	17.4	1.8	2.5	1.2	21.6
Ukrainian S.S.R.	1928	17.6	21.4	8.3	7.4	4.3	5.6	3.2	4.0	1.4	26.8
	1941	14.1	17.8	14.4	7.1	2.8	13.2	1.8	2.3	1.7	24.8
White Russian S.S.R.	1928	18.9	24.9	6.6	6.5	7.2	2.2	0.6	7.4	3.2	22.5
	1941	15.0	13.6	16.0	4.9	2.1	9.4	1.2	3.9	1.7	32.2

(b) Rural medical centers.—The number of rural medical centers in the U.S.S.R. was 13,512 in 1941. Within the U.S.S.R., the R.S.F.S.R. had 7,963, the Ukrainian S.S.R. 2,445, the White Russian S.S.R. 539, the Karelo-Finnish S.S.R. 116, and the Moldavian S.S.R. 28 (TABLE XI-4).

(c) Technical equipment.—The technical equipment of the hospitals in the U.S.S.R. must be regarded as poor. Information on such equipment for rural hospitals, presumably inferior to that of urban hospitals, is not available. In the cities of the entire Soviet Union in 1941 it was reported that 25.5% of all the hospitals had physiotherapy equipment, 36.2% had X-ray equipment, and 41.9% had laboratory equipment. The figures for the constituent republics in European Russia are given in TABLE XI-5.

TABLE XI - 4

NUMBER OF RURAL MEDICAL CENTERS, 1913 TO 1941

U.S.S.R. and constituent republics	Year 1913	1928	1932	1938	1941
U.S.S.R. total	4,367	7,531	9,883	11,594	13,512
R.S.F.S.R.	3,069	4,940	5,442	6,992	7,963
Ukrainian S.S.R.	1,007	1,751	2,641	2,148	2,445
White Russian S.S.R.	131	188	314	467	539
Karelo-Finnish S.S.R.	- - - Included in R.S.F.S.R. - - -				116
Moldavian S.S.R.	- - - Included in R.S.F.S.R. - - -				28

TABLE XI - 5

CITY HOSPITALS WITH PHYSIOTHERAPY, X-RAY, AND LABORATORY EQUIPMENT, 1941

U.S.S.R. and constituent republics	Percentage of total number of hospitals With physiotherapy	With X-ray	With laboratories
U.S.S.R.	25.5	36.2	41.9
R.S.F.S.R.	27.5	38.2	40.1
Ukrainian S.S.R.	27.8	36.3	48.2
White Russian S.S.R.	20.9	36.6	77.6
Karelo-Finish S.S.R.	45.5	63.6	36.4
Moldavian S.S.R.	57.2	71.4	71.4

(d) Health propaganda.—Health propaganda was virtually unknown in Tsarist Russia and the number of outpatient clinics for medical consultation was small. By emphasizing health propaganda and free medical advice to the population, outpatient clinics have increased very considerably in number. The absolute number of clinics is still inadequate, but the tendency is to further develop these facilities. (TABLE XI-6)

TABLE XI - 6

NUMBER OF OUTPATIENT CLINICS IN CITIES, 1913 to 1941

U.S.S.R. and constituent republics	Year 1913	1928	1932	1938	1941
U.S.S.R.	1,230	5,673	7,340	12,645	13,461
R.S.F.S.R.	893	3,307	3,988	7,543	8,160
Ukrainian S.S.R.	187	1,276	1,712	2,554	2,600
White Russian S.S.R.	24	276	337	487	476
Karelo-Finnish S.S.R.	3	35	31	44	65
Moldavian S.S.R.	..	10	13	34	30

(2) Medical institutions

(a) The Academy of Medical Sciences.—The Academy of Medical Sciences comprises 60 of the most outstanding medical scientists of all branches of medical science, all of whom were confirmed in 1945 by the Narkomzdrav as Academicians. The nature of the activities of this body are not yet known.

(b) Research institutions and medical schools.—The research institutions and medical schools in the U.S.S.R. in 1941 numbered 223 separate institutes whose medical research was carried on under the authority of Narkomzdrav and whose personnel amounted to 19,500 scientific workers. The institutes operate with the advice of 16 or 17 committees of the Medical Research Council (Uchonyy Meditsinskiy Soviet), which is a body of outstanding

scientists selected by Narkomzdrav. The council examines their research plans, personnel and equipment needs, and budget, after which its decisions are transmitted to the Narkomzdrav where final decisions are made.

There are four kinds of institutes under the Narkomzdrav: Central Institutes, Special Institutes, the All-Union Institute of Experimental Medicine (VIEM), and Medical Institutes (Medical Schools).

1. CENTRAL INSTITUTES.—Central Institutes are engaged chiefly in clinical work. There are 12 of them and all conduct research in their own fields; tuberculosis, skin and venereal diseases, microbiology and epidemiology, oncology, neurosurgery, endocrinology, otolaryngology, ophthalmology, plague, malaria and tropical diseases, obstetrics and gynecology, and pediatrics. A branch of each Central Institute must be established in each republic of the U.S.S.R., budgeted and coordinated through the Narkomzdrav of the republic, but directed by their respective parental institutes. Vaccines, sera, and other biologic products are manufactured in the Central Institute of Microbiology and Epidemiology.

2. SPECIAL INSTITUTES.—Matters such as traumatology, prosthesis, orthopedics, industrial hygiene, and sanitation education are dealt with by Special Institutes. These organizations do not have branches in the republics and usually are limited to a single laboratory. Each Narkomzdrav has its own Special Institutes which are directly under its jurisdiction and are not connected with the national institutes.

3. ALL-UNION INSTITUTE OF EXPERIMENTAL MEDICINE (VIEM).—This organization does most of the fundamental medical research. The Moscow branch has 13 departments; the Leningrad branch, 6 departments; and at Sukhumi in the Caucasus there is a monkey station. The departments of the Moscow branch are: General physiology, physiology of the nervous system, physiology of the special organs, biochemistry, organic chemistry, morphology, general experimental biology, biophysics, general pathology, virus diseases, microbiology, brucellosis, and tularemia. There are small physiology laboratories which work on problems in electrophysics, vitamins, endocrines, and ferments. Two hospitals are attached to VIEM in Moskva (Moscow), one for surgery and the other for neurosurgery. The departments of the Leningrad branch are: Physiology, special physiology, chemistry of microbes, microciology, morphology, and general pathology.

The VIEM personnel numbers about 2,000, of whom 500 are scientific workers including 85 professors. The VIEM publishes a monthly journal, the Arkhiv Biologicheskikh Nauk (Arch. Biol. Sciences), as well as brochures and collected works.

4. MEDICAL INSTITUTES.—In 1941 there were 72 medical institutes, known as Medvuz (Meditsinskie vishie Uchebhie Zavedeniya), of which 51 were general medical schools and 21 were stomatologic institutes and pharmacologic institutes. In addition there is a Medico-Military Institute in Moskva (Moscow), which gives a complete medical course. This school is under the direction of military authorities. Each republic has at least one general medical school. The total enrollment of students in the general medical schools in 1941 was approximately 106,000, the largest enrollments being in Moskva (Moscow), Leningrad, Kiyev (Kiev), and Khar'kov. The total enrollment in 1939 in the Institutes of Stomatology and of Pharmacology was about 14,000.

Each department of a medical institute is required to conduct scientific work as well as to teach students. The institutes are directly under the jurisdiction of the republic Narkomzdrav, and their research programs are examined and supported by the respective local narkomzdrav. The 46 medical institutes located in European U.S.S.R. are listed in TABLE XI-7.

TABLE XI - 7

MEDICAL INSTITUTES IN EUROPEAN U.S.S.R., 1935

Republic or oblast	Town	Name of institute or school	Specialty taught
Rostovskaya Oblast'	Rostov-na-Donu	Meditsinskiy Institut (Medical school)	All specialties
Voronezhskaya Oblast'	Voronezh	Meditsinskiy Institut (Medical school)	do.
Gor'kovskaya Oblast'	Gor'kiy	Meditsinskiy Institut (Medical school)	do.
Smolenskaya Oblast'	Smolensk	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Ivanovskaya Oblast'	Ivanov	Meditsinskiy Institut (Medical school)	Therapy, prophylaxis, pediatrics, general medicine
Kuybyshevskaya Oblast'	Kuybyshev	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Kurskaya Oblast'	Kursk	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Leningradskaya Oblast'	Leningrad	Pervyy Meditsinskiy Institut (1st medical school)	All specialties
Do.	do.	Vtoroy Meditsinskiy Institut (2nd Medical school)	General medicine, therapy, prophylaxis, hygiene
Do.	do.	Tretiy Meditsinskiy (3rd medical school)	Therapy, general medicine

TABLE XI - 7 (Continued)

Republic or oblast	Town	Name of institute or school	Specialty taught
Leningradskaya Oblast' (Continued)	Leningrad (Continued)		
Do.	do.	Pediatricheskiy Institut (Pediatrics school)	Pediatrics
Do.	do.	Medvuz pri bolnitse Mechnikova (Medical school attached to Mechnikov Hospital)	Hospital and school
Do.	do.	Stomatologicheskiy Institut (School for stomatology)	Stomatology
Moskovskaya Oblast'	Moskva	Pervyy Meditsinskiy Institut (1st Medical school)	All specialties
Do.	do.	Vtoroy Meditsinskiy Institut (2nd medical school)	General medicine, therapy, pediatrics
Do.	do.	Medvuz pri Krasno Sovetskoy Bolnitse (Medical school attached to hospital)	Hospital and school
Do.	do.	Medvuz pri Bolnitse Babukhina	Hospital and school
Do.	do.	Farm. Fakulbet (Pharmacological faculty)	Pharmacology
Do.	do.	Stomatologicheskiy Institut (Stomatological institute)	Stomatology
Saratovskaya Oblast'	Saratov	Meditsinskiy Institut (Medical school)	General medicine, hygiene, therapy, pediatrics
Arkhangel'skaya Oblast'	Arkhangel'sk	Meditsinskiy Institut (Medical school)	Therapy, prophylaxis
Astrakhanskaya Oblast'	Astrakhan'	Meditsinskiy Institut (Medical school)	Therapy, prophylaxis
Stalingradskaya Oblast'	Stalingrad	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Tatarskaya A.S.S.R.	Kazan'	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Bashkirskaya A.S.S.R.	Ufa	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Krymskaya Oblast'	Simferopol'	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Udmurtskaya A.S.S.R.	Izhevsk	Meditsinskiy Institut (Medical school)	Therapy, general medicine
Ukrainian S.S.R. Vinnitskaya Oblast'	Vinnitsa	Meditsinskiy Institut (Medical school)	Therapy and pharmacology
Dnepropetrovskaya Oblast'	Dnepropetrovsk	Meditsinskiy Institut (Medical school)	Therapy and prophylaxis
Do.	do.	Farmatsevticjeskiy Institut (Pharmaco-logical school)	Pharmacology
Stalinskaya Oblast'	Stalino	Meditsinskiy Institut (Medical school)	Therapy and general medicine

TABLE XI - 7 (Continued)

Republic or oblast	Town	Name of institute or school	Specialty taught
Kiyevskaya Oblast'	Kiyev	Meditsinskiy Institut (Medical school)	All specialties
Do.	do.	Farmatsevticheskiy Institut (Pharmacology school)	Pharmacology
Do.	do.	Stomatologicheskiy Institut (Stomatology school)	Stomatology
Do.	do.	Proizvodstvennyy Meditsinskiy Institut (School for industrial medicine)	Therapy, prophylaxis, general medicine
Odesskaya Oblast'	Odessa	Meditsinskiy Institut (Medical school)	Therapy, prophylaxis, hygiene, pediatrics
Do.	do.	Mediko-Analiticheskiy Institut (School for medical analysis)	Laboratory work and sanitation research
Do.	do.	Proizvodstvennyy Meditsinskiy Institut (School for industrial medicine)	Therapy, prophylaxis
Khar'kovskaya Oblast'	Khar'kov	Meditsinskiy Institut (Medical school)	Therapy, prophylaxis, pediatrics, hygiene
Do.	do.	Farmatsevticheskiy Institut (Pharmacology school)	Pharmacology
Do.	do.	Stomatologicheskiy Institut (Stomatology school)	Stomatology
Do.	do.	Psikho-Nevrologicheskiy Institut (School for neuropsychiatry)	Neuropsychiatry
Do.	do.	Proizvodstvennyy Meditsinskiy Institut (School for industrial medicine)	Therapy, prophylaxis
Do.	Poltava	Proizvodstvenny Meditsinskiy Institut (School for industrial medicine)	Therapy, prophylaxis
White Russian S.S.R.	Minsk	Meditsinskiy Institut (Medical school)	Therapy, prophylaxis
Do.	Vitebsk	Meditsinskiy Institut (Medical school)	Therapy, prophylaxis

In addition to medical schools there are "postgraduate institutes" for physicians, and they are entirely separate from the medical schools. Specialists in clinical subjects and research workers are trained in the medical schools or in the many research institutes of the Soviet Union. Of the scientists and teachers working in the medical and research institutes, 87% have been medically trained and the remainder were biologists, chemists, economists, and engineers. Sixty percent of the workers at these institutes were women.

C. Medical personnel

(1) Professional medical personnel

(a) General.—The physicians (general practitioners and specialists), dentists, and veterinarians who have been educated in institutions of university standard, constitute the higher medical personnel.

(b) Preparation for medical practice.—In 1930 during the first Five-Year Plan, the modern period of medical education began in Soviet Russia. Emphasis on medical education was deemed essential and radical changes were

made in its administration and curriculum. Medical schools were placed under the jurisdiction of the Commissariat of Public Health (Narkomzdrav). The medical course was shortened to four years. The subjects were reduced in number and were coordinated, duplication was eliminated, recitations and lectures were restricted, and use of Latin terms discontinued. Moreover, the usual subjects of medicine were curtailed while hygiene and preventive medicine were alloted additional time. Social sciences, economics, physical culture, and military training occupied almost 40% of the time. Students worked in groups and carried out collective tasks. Examinations again were abolished. Since specialists were desired in all institutions, three faculties of medicine were established: general medicine and prophylaxis, hygiene and sanitation, and pediatrics including maternity and child protection. The results achieved from the curriculum were not satisfactory.

By 1935 the medical course was again lengthened to five years. Lectures and recitations were increased, group projects were reduced, Latin was resumed for medical terms, and individual examinations were reintroduced. At the same time, the number of instructors and the amount of medical equipment were increased.

With the beginning of 1945 the course of study in all medical universities was advanced to cover six years. The new curriculum was to pay particular attention to anatomy, physiology, and biochemistry. Intensified instruction was to be given in clinics for internal diseases, infectious diseases, surgery, pediatrics, and obstetrics and gynecology. Radiology, urology, and physiotherapy was to be taught only in basic surgical and therapeutic clinics.

(c) Physicians.—In 1913 there were 19,785 physicians in Russia; in 1941 the number was 130,348. Despite severe losses medical education continued without interruption throughout the war. During the first 18 months 32,000 graduates took their places in the ranks of military and civilian medicine of the Soviet Union. No information on the territorial distribution of physicians in European U.S.S.R. is available.

For medical students and doctors, three types of practice are to be introduced: 1) practice as a feldsher (doctor's assistant) after termination of the third year of study; 2) practice preliminary to becoming a doctor, after four years of study; 3) practice as a doctor, after five years of study. Every physician in the U.S.S.R. is required to take three to six months of postgraduate instruction every three years.

(d) Dentists.—The dentists, like the physicians, are under the jurisdiction of the Narkomzdrav. Since 1918 the dental profession has been subdivided into two groups: 1) stomatologists, and 2) dentists (zubnoy vrach). The stomatologists are fully trained doctors who have specialized in dentistry and stomatology. The dentists receive their training in dentistry only and do not study in medical schools.

The number of dentists in European U.S.S.R. reported by the Soviet authorities in 1937 was 10,508, or 88% of the total number of dentists in the entire territory of the Soviet Union. In that year it was planned by 1942 to increase the total number for the entire Union from 13,000 to 32,000. Whether this goal was reached cannot be determined from available literature.

(e) Veterinarians.—The department of veterinary affairs in the Soviet Union is part of the NKZ or Narkomzem (People's Commissariat of Agriculture). Each constituent republic has its own individual NKZ and thus its own attached department of veterinary affairs which has the task of managing, administering, and supervising all veterinary activities of that particular republic. Each kray, oblast, and rayon has also its own individual veterinary department. Among other activities the veterinarians take care of slaughterhouses and meat inspections as well as the inspection of industries engaged in processing animal products.

No recent data are available on the present veterinary manpower in European U.S.S.R. The veterinary feldsher has the same position in the veterinary profession as the regular feldsher in the medical profession.

(2) Subprofessional medical personnel

(a) General.—Apart from the professional personnel there are other medical workers comprising the "middle medical classifications," apparently so-called because they receive their training in middle schools (preparatory or high schools). Middle, or subprofessional, medical workers consist of the following categories: Feldsher, midwife, medical nurse, child nurse, laboratory technician, dental technician, and pharmacist.

(b) Feldshers.—The position of the feldsher and the feldsheritsa is a peculiarly Russian institution. The word "feldsher" is of German origin and literally means "field barber." Before the nineteenth century all European armies had surgeons who had not been trained in universities but had received their preparation through apprenticeship and special courses. On account of its size and the general lack of trained physicians and surgeons, however, the Russian Army still makes use of the feldsher. He practices not only in the army but among civilians.

The special functions of the feldshers always have been to assist physicians, carry out their instructions, practice minor surgery, vaccinate, and assist in fighting epidemics. Because of the lack of physicians, some rural medical stations are headed by feldshers. The number of aid stations headed by feldshers and midwives in 1941 is shown in TABLE XI-8.

TABLE XI - 8

NUMBER OF AID STATIONS HEADED BY FELDSHERS AND MIDWIVES, 1941

U.S.S.R. and constituent republics	Feldsher aid stations	Feldsher-midwife aid stations	Midwife aid stations	Trachoma aid stations	Venereal disease aid stations	Malaria aid stations	Total
U.S.S.R.	19,683	8,885	5,117	4,577	170	980	39,412
R.S.F.S.R.	11,552	6,218	2,534	3,564	90	183	24,141
Ukrainian S.S.R.	4,759	998	1,744	18	13	14	7,546
White Russian S.S.R.	48	901	55	179	..	..	1,183
Karelo-Finnish S.S.R.	116	83	11	..	..	..	210
Moldavian S.S.R.	52	5	10	..	..	..	67

In 1937 the number of subprofessional medical personnel trained in feldsher schools was 44,770; in schools of midwifery, 13,300; in schools of nursing (medical and child), 95,000; and in courses for laboratory technicians, 5,200. These figures apply to the whole of the Soviet Union. No information covering European U.S.S.R. alone is available. In 1941 there were in the Soviet Union 985 subprofessional schools which graduated 85,000 students per year. The majority of the 460,000 middle medical workers in 1941 were women.

(c) Nurses.—The exact number of nurses in European U.S.S.R. is not known from available sources, but it is known that there is a great shortage, probably because factories, offices, and social services absorb a large number of the women workers. Medical nurses and children's nurses are now being trained in two-year courses.

(d) Dental technicians.—Although trained for technical work only, dental technicians perform some clinical work because of the shortage of fully qualified dentists. Some technicians have acquired considerable skill in clinical dentistry and help to relieve the dental manpower shortage. The number of these workers in European U.S.S.R. is not known.

(e) Midwives.—The midwife is an essential factor in obstetrical practice in the Soviet Union. The large number of midwives which existed prior to the era of trained obstetricians is steadily decreasing, but in rural localities the midwife is still the only practitioner available. No information as to the number of midwives in European U.S.S.R. has been found.

(f) Laboratory technicians and pharmacists.—These workers in the Soviet Union occupy a position comparable to that in other countries.

D. Rest and recreation facilities

(1) Health resorts

The U.S.S.R. has only a few elegant resorts, but is rather rich in localities which provide good conditions for different types of therapy. The broad area extending from the Arctic Ocean to the Black Sea and to the Pacific Ocean contains innumerable varieties of mineral springs, beaches, mountain resorts, and other resorts where climatic treatment, balneotherapy, and radioactive mud baths are available. Of the 1,400 mineral springs spread over the entire continent of Europe, 534 are within the territory of European U.S.S.R.; many other such springs are situated in the Asiatic part of the Soviet Union.

Although the most numerous health resorts of the entire Union are in the Caucasus, the most important in the European part of the U.S.S.R. are the Crimean resorts. The latter are located mainly along the southern beaches of the Crimean peninsula, and are operated all the year round. The numbers of health resorts in different parts of the U.S.S.R. are shown in TABLE XI-9. Next in importance are the resorts near Odessa, such as the towns of Kuyal'nik, Proletarskoye Zdorov'je, and Kholodnaya Balka, known for their therapeutic muds. Farther to the north are Slavyansk near Khar'kov, Osipenko and Yeysk on the Sea of Azov, and El'ton and Tinaki in the lower Volga region. An extensive strip of health resorts is represented by the Black Sea coast of the Caucasus, extending as far south as Batumi (Batum), and including the towns of Sochi, Gagry, Sukhumi, and Krasnaya Polyana. These places are considered to be equal in their climatic advantages and other features to Nice and the rest of the French and Italian Riviera.

Sanatorium care is available in the health resorts for patients who need it, but ambulatory patients live in hotels, villas, and country homes attached to the sanatoria. Polyclinics have specialists on their staffs, including balneologists and special physiotherapists who are well trained for the particular type of work carried on in the health resort where the clinic is located.

There are several research institutes which occupy themselves with the exploration of the different therapeutic factors of any type of health resort; they are under the general direction of the "Tsentral'nyy Institut Kurarbologii" (Central Institute for Balneology), located in Moskva (Moscow). The institutes in Yalta and Krasnodar concentrate on research connected with health resorts for tuberculosis. The "Sechenovskiy Institut" in Sevastopol, does research in physiotherapy among other things. These institutes also train doctors for practice in health resorts.

The purely scientific activities of such institutions are under the jurisdiction of the Narkomzdrav, which also controls those specialities which are secondarily connected with health resort activities, such as geology, chemistry, biology, climatology, engineering, and construction. The official paper of these health resort institutions is the "Kurortuoe Delo".

TABLE XI - 9

YEAR-ROUND HEALTH RESORTS FOR ADULTS AND CHILDREN, 1935

Location	Health Resorts for Adults		Health Resorts for Children		
	Tuberculosis sanatoria	All other resorts	Tuberculosis sanatoria	Neuropsychiatry sanatoria	All other resorts
U.S.S.R.					
Number of resorts	113	439	127	32	306
Number of beds	13,471	80,715	9,311	1,838	34,260
R.S.F.S.R.					
Number of resorts	92	297	89	24	172
Number of beds	10,195	56,775	6,480	1,459	18,299
Ukrainian S.S.R.					
Number of resorts	12	81	27	4	73
Number of beds	1,853	15,867	1,781	244	8,531
White Russian S.S.R.					
Number of resorts	2	2	1	..	4
Number of beds	411	150	200	..	285

(2) Red Corners, clubhouses, and parks

The U.S.S.R. was the first country to organize a program of rest and recreation on a large scale as part of the general public-health program of the nation. Every working place, small as it may be, has its "Red Corner", or social center; larger enterprises have their own clubhouses built with money earned by the factory. These clubs have rooms for dining, rest, study, and games; a dance hall, library, cinema, and theatre. The workers' clubs are organized by trade-unions and are exceedingly active.

There are also many rest and recreation opportunities outside of the working places, including one-day rest homes and parks. All cities take pride in having good "Parks of Culture and Rest," the prototype of which is the "Maxim Gorki Park" in Moskva (Moscow). These parks are centers of recreation and entertainment, and have become institutions of great hygienic significance.

In addition, physical culture and sports have become highly popular. It has been estimated that about 25,000,000 people take some active part in sports in the U.S.S.R. Some of the factories begin their day's work with physical exercises, and gymnastic periods of three to five minutes are held during working hours. The trade-unions, in addition, have clubs outside the factories and mills, such as yacht, rowing, and football clubs where the workers of various plants meet. Corrective physical exercises are utilized in the factories to counteract the effects of certain occupations, and to increase the productiveness of labor.

E. Social service agencies

(1) General

Social service activities in the U.S.S.R. are largely state-controlled and state-supported except for the Red Cross and Red Crescent organizations. Governmental social service is a part of the national medical service program and includes such features as social insurance and care for mother and child. The health of the individual is considered just as much the responsibility of the government as the health of the nation as a whole. The state-financed

health system has several characteristic features, as follows: Medical service is free to all; the prevention of diseases is its principal goal; all health activities are directed by central bodies (People's Commissariats of Health); and promotion of health is being planned on a large scale.

(2) Social insurance

About 30% of the population of the Soviet Union consists of wage-earners. Their health service is financed primarily through social insurance which is administered by the trade-unions. Social insurance in the Soviet Union includes: 1) Medical care, 2) benefits in case of temporary disabilities, 3) additional benefits to families having children beyond a certain number and for funerals, 4) unemployment benefits, 5) invalid pensions, 6) old-age pensions, and 7) pensions to families in case of death of the breadwinner. Social insurance extends its benefits not only to the insured workers but to their dependents as well.

In case of temporary disability the insured person is paid full wages from the first day, the allocation amounting to the average of the wages paid during the last three months. In case of permanent disability, whatever its cause may be, the insured worker or employee is entitled to a pension. Pensions range from 40 to 100% of former wages according to the degree of disability and its cause. Furthermore, pensions are paid to family members who have lost their main source of support.

All insured persons are entitled to old-age pensions of 50 to 60% of the last year's wages upon reaching the age of 60 (women 55), or 50 if they were employed in unhealthy or underground work. They must, however, have worked for not less than 25 years (20 years for women).

While social insurance is administered by the trade-unions, the medical services given to the insured workers and their families is controlled by the Commissariats of Health. They are responsible for providing such services, and they receive the financial means required from the social insurance funds.

The health work for the agricultural population is financed by the so-called "indivisible funds" which the kolkhozs (collective farms) have in their budget. These funds constitute between 10% and 20% of each kolkhoz' earnings, a part of which is used for acquiring and improving equipment, and part of which is used for building nurseries and dispensaries, and for health work at large. Since these funds are not sufficient for a full health program, they must be supplemented by mutual aid funds and state medical service through a network of health stations financed primarily from public funds.

(3) Care for mother and child

The special health problems and needs of women and children are the concern of a number of specialized institutions. Health centers usually have Women's Consultation Bureaus attached to them, to which women can apply for advice and treatment. Before World War II almost all the children born to city women were delivered in maternity hospitals, but the country districts were not so well equipped. There were special polyclinics, dispensaries, and hospitals provided for children, and in many cases children's consultation bureaus were attached to health centers. It was the duty of these bodies to supervise the health of the child from the day of its birth, to see that the necessary vaccinations and inoculations were administered, and that medical aid was given either at home or in the hospital when required. Nurseries and kindergartens cared for the preschool child in town and country, while a special team of school doctors as well as the general network of health centers looked after the school child, and special group treatment was arranged for delicate children. Regular medical examinations and special health care were prescribed for adolescents, and their health was further protected by labor legislation controlling their hours of work and vacations. Research centers such as the Central Scientific Research Institute for the Protection of Motherhood and Infancy study all problems connected with health of women and children, and establish norms and set standards to be observed in their health and care.

There are no statistics at present available on the care of children in European U.S.S.R. alone. The statistics for the whole of the Soviet Union give an inaccurate picture if used as an indication since the European part is far in advance of the rest of Russia.

The war had a very detrimental effect on the health of Russian children, particularly in the front areas and in German-occupied territories. Insufficient food, prolonged cold, bad living conditions, and the psychological shocks inflicted by bombardment all took their toll, and most of the children treated in children's hospitals and polyclinics were found to be suffering from alimentary dystrophia, avitaminosis, and similar diseases. Children subjected to the German occupation also suffered grave mental disabilities. Institutional facilities for children, including nurseries, were criticized in Soviet papers for lack of manpower and general equipment. The noticeable effects of war conditions on the health of children may prove a handicap to the Soviet efforts for postwar reconstruction.

(4) Red Cross and Red Crescent

The Russian Red Cross, called in Moslem regions the Red Crescent, was organized in 1867. It is a philanthropic society that follows the pattern of the Red Cross societies in other countries.

The Soviet Red Cross is a member of the International Red Cross and has representatives in Geneva and New York. A delegate of the International Red Cross has an office in Moskva (Moscow). In 1934 the Red Cross and Red Crescent of the U.S.S.R. were admitted to the League of Red Cross Societies.

Activities of the Red Cross and Red Crescent include nursing sick and wounded soldiers and aiding prisoners of war. During the famine period 1921 to 1922 they organized large-scale relief operations in the Volga region and fed 130,000 people daily. They work in close cooperation with authorities, and supplement and integrate the government medical services. Their membership in the Soviet Union grew from 75,000 in 1926 to over 5,000,000 in 1934. In addition to the activities mentioned above, the Red Cross occupies itself with health education, teaching of first-aid measures, and training of nurses and health instructors. In 1935 the Red Cross established 48,282 stations, mostly in villages, where they performed sanitation work. No statistics are available for the activities, personnel, and equipment controlled by the Red Cross and Red Crescent societies in European U.S.S.R.

113. DISEASES

A. Diseases of military importance

(1) Malaria

(a) Distribution.—The U.S.S.R. contains a large malarious area which extends from the Asiatic steppes to the plains around the Caspian Sea; from Astrakhan' along the banks of the Volga River on the one side to the Caucasian valleys on the other. It reaches the northern

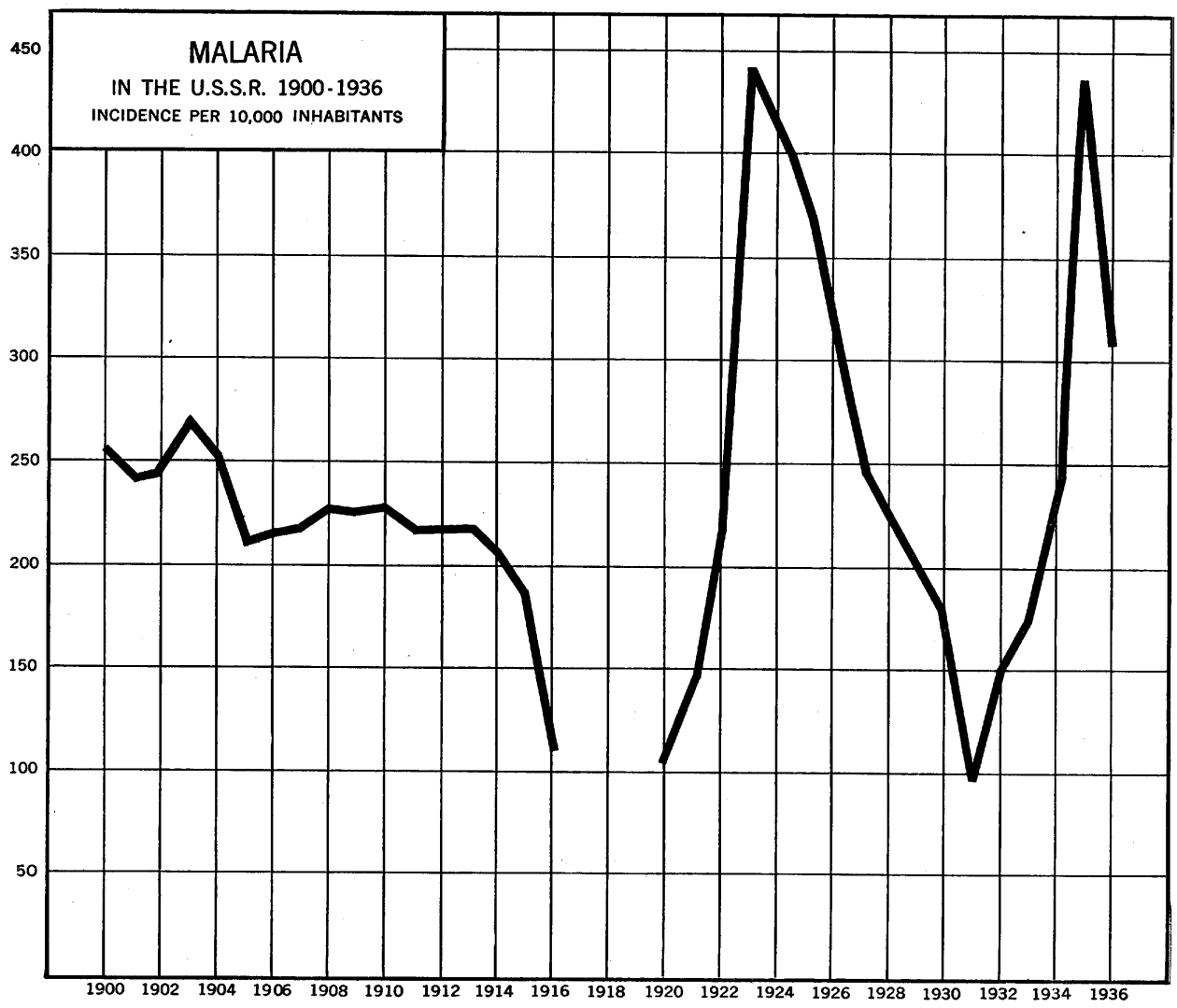

FIGURE XI - 5. *Malaria in the U.S.S.R.*
Incidence per 10,000 inhabitants, 1900-1936.

shores of the Black Sea and extends along the banks of the Dnepr (Dnieper) and Dnestr (Dniester) rivers into the Ukraine and Volhynia, continuing along the Danube River to the Balkans.

The Ukrainian swamps offer favorable breeding sites for mosquitoes. The overflowing of the big rivers in spring creates new swamps each year and plays an important part in increasing the incidence of malaria to epidemic proportions. The important malaria vectors in European U.S.S.R. are discussed in Topic 111, C, (1), (*a*).

Before the revolution, malaria was the predominant communicable disease with a morbidity rate of 215 per 10,000 population. In the six years (1918 to 1923) following the revolution, the U.S.S.R. had a severe outbreak of malaria (1923). The greatest number of cases occurred from April to August, with the maximum in June. The officially reported morbidity rate for malaria in 1923 was 474 per 10,000 population (FIGURE XI-5), an estimate which appears to be too low. The total number of malaria patients in the entire U.S.S.R. in 1923 was 12,500,000, of whom some 62,000 died. The morbidity rates per 10,000 population for various regions of European U.S.S.R. in the 1923 outbreaks were reported as follows: Lower Volga 1,548.8, Don 921.9, Central Volga 812.0, Ukrainian S.S.R. 232.2, Northern Provinces 184.6, Moskva (Moscow) 178.0, Crimea 84.3, White Russian S.S.R. 22.4, and Sea Regions (Baltic) 9.4.

In the 1923 epidemic all three common types of malaria were found, but *falciparum* infection, which in nonepidemic years is almost completely absent, was variously estimated to account for 50 to 90% of all cases. The case fatality rate varied from 0.5 to 0.8%. The greatest number of *falciparum* cases occurred in August; the peak for *vivax* infections was noted in May and June.

Following 1923 malaria cases became less numerous and the morbidity rate per 10,000 population for the following six years showed a steady decline as follows: 446.5 for 1924, 229.4 for 1925, 164.4 for 1926, 130.7 for 1927, 92.5 for 1928, and 58.0 for 1929.

(b) Endemicity.—The morbidity rate and predominant type of malaria differ from year to year in various geographical regions of the U.S.S.R. The disease is endemic in the Ukraine, the Crimea, and the Lower Volga region. In these regions the *falciparum* type of infection usually predominates. Troop movements and traffic between the various provinces promote the transfer of an-

opheles mosquitoes and *falciparum* carriers from one region to another. It is by these means that the *falciparum* type of malaria is transplanted to the northern provinces of the U.S.S.R. The extent of the disease is shown in appended maps (FIGURES XI-6 to XI-8, inclusive).

In most of European U.S.S.R. malaria is hypoendemic, though in some localities such as Odessa and Dnepropetrovsk, it sometimes may become endemic. Occasionally there occurs an extensive outbreak which, however, never assumes the proportions which normally might be expected in endemic or hyperendemic regions. In European U.S.S.R. the *vivax* type of malaria predominates. The introduction of the *falciparum* type of malaria by carriers from other regions such as the Caucasus may result in small epidemics which are limited in the number of cases and the area involved. An example of this type of localized epidemic is reported from Poltava where 52 cases of *falciparum* infection in 1936 and 32 cases in 1937 were reported. The number of cases decreased each year, and by 1943 no *falciparum* cases were reported.

The Ukrainian S.S.R. has the highest malaria morbidity rate among the European Soviet Republics. The average annual number of malaria cases from 1900 to 1914 was 231.6 per 10,000 population in nine Ukrainian districts as compared with 181.0 per 10,000 population in the remainder of European U.S.S.R. The average number of cases according to districts in the same years appear in the accompanying tabulation:

District	Number per 10,000 population	District	Number per 10,000 population
Yekaterinoslav (Dnepropetrovsk) *	438.2	Tavrichanskiy	361.0
Khar'kov	392.7	Kherson	198.2
Poltava	383.6	Kiyev (Kiev)	81.8
Chernigov	361.4	Podol	68.9
		Volhynia (Volynskaya Oblast') *	42.3

*Present name

The malaria epidemic which occurred in the southern European and Caucasian provinces and republics of the Soviet Union during 1923 was ascribed to: a) an unprecedented movement of population masses brought about by the Russian civil war; b) particularly hot summers in 1921 and 1922 which favored the numerical increase of anopheline mosquitoes; c) increase of mosquito breeding places created by war destruction of houses and cultivated fields; d) the wholesale slaughtering of domestic animals upon which certain species of *Anopheles* fed; e) scarcity of quinine during the blockade during and after the civil war; and f) the reduction of natural resistance to disease by famine.

An epidemic of malaria which occurred in 1935 followed a period of famine during which there was mass slaughtering of livestock, and the people's resistence to disease was at a low ebb. Since 1935 the malaria morbidity rate again has steadily diminished. An investigation by the Germans during their military occupation revealed only one carrier among 850 persons examined in a zone which was considered to be malarious.

(c) Malaria control.—A systematic campaign of malaria control was instituted in 1920 with the establishment of a Central Institute for Tropical Diseases. The structure of the malaria control organization in the U.S.S.R. is shown in FIGURE XI-9. Cooperating in the malaria control campaign is the Commissariat of Agriculture and Transportation. The campaign includes oiling or draining swamps, examining inhabitants in infected areas, and distributing quinine. A perceptible lowering of malaria morbidity became apparent only after 1936.

Malaria stations have been built in malarious districts. Each station is equipped with a laboratory, dispensary, hospital, entomological department, and propaganda museum. The staff of a malaria station consists of a malariologist who is a physician, an assistant malariologist, and a subordinate staff which varies according to the size of the station. Airplane dusting with Paris green is utilized. Most of the malaria stations remain closed during the winter. The numbers of sanitary and epidemiological institutions, including malaria stations, are listed in TABLE XI-10.

TABLE XI - 10

NUMBER OF SANITARY AND EPIDEMIOLOGICAL INSTITUTIONS, 1941

U.S.S.R. and constituent republics	Sanitary and epidemiological stations	Disinfection stations	Disinfection aid-stations and cadres	Sanitary and bacteriological laboratories	Malaria stations	Malaria aid-stations
U.S.S.R.	1,760	181	2,107	1,405	1,086	1,859
R.S.F.S.R.	746	69	905	726	579	602
Ukrainian S.S.R.	677	101	551	450	150	180
White Russian S.S.R.	98	5	116	50	9	36
Karelo-Finnish S.S.R.	6	..	23	7	..	..
Moldavian S.S.R.	8	..	1	7	3	4

Much of the antimalarial work was disrupted because of the war. In 1943 there were indications of an increase in the incidence of malaria in the U.S.S.R. The areas specifically mentioned in published reports include the Tatar A.S.S.R., and the oblasts of Voronezh, Kuybyshev, Rostov, and Stalingrad. The Ukrainian S.S.R. has recorded a tenfold increase over the incidence reported for 1940; in the Lisichansk rayon, for example, about 3,500 of its 4,000 inhabitants were stricken with malaria, and in the village of Sirotino 250 of the 400 inhabitants were afflicted with the disease. Efforts are being made to reestablish malaria-control measures wherever they are needed.

(2) Sandfly fever (pappataci fever)

This is a virus disease spread by a species of sandfly belonging to the genus *Phlebotomus*. In European U.S.S.R. sandfly fever is encountered only in the Crimea where it is sometimes called "summer grippe".

The disease has a tendency to break out suddenly, involving numerous persons simultaneously. It has an incubation period of three to nine days and a short prodromal period. During convalescence the patients remain greatly weakened for a long time. An extensive outbreak occurred among the troops of the Red Army stationed in the Crimea in 1922. Sandfly fever was first found in Sevastopol'; later many cases were found in Bakhchisaray, Yalta, and other points of the southern coast of the Crimean peninsula.

The disease occurs predominantly in the beginning of the summer, and again around the first of August, coincident with the appearance of two different generations of sandflies in the course of the current year. It was established in 1932 that cases of pappataci fever were noted soon after the first sandflies appeared; it is therefore assumed that the virus hibernates in the larvae of the sandflies.

The diagnosis of sandfly fever is very difficult ,and small isolated outbreaks are often mistaken for influenza. No figures on the incidence of the disease during recent years

FIGURE XI-6
MALARIA MORBIDITY, 1902-1911
JANIS 40
CONFIDENTIAL

FIGURE XI-7
MALARIA MORBIDITY, 1924
JANIS 40
~~CONFIDENTIAL~~

FIGURE XI-8
MALARIA MORBIDITY AND CONTROL STATIONS, 1929
JANIS 40
~~CONFIDENTIAL~~
RESTRICTED
10454

EUROPEAN U.S.S.R.

MALARIA MORBIDITY AND CONTROL STATIONS
1929

Number of patients per 10,000 persons; yearly average:

1-50	50-100	100-200	200-400	400-600	600-1000	1000 or more

- Malaria Control Station
- Tropical Institute
- Sanitary and Bacteriological Institute

BOUNDARIES
- International (1937)
- Union republic (1929)
- Autonomous republic, oblast', kray, etc. (1929)

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97. KOSTA-KHETAGUROVO
98. ORDZHONIKIDZEVSKAYA
99. GROZNYY
100. KHASAVYURT
101. MAKHACHKALA
102. BUYNAKSK
103. DERBENT
104. SUKHUMI
105. OCHEMCHIRI
106. GALI
107. ZUGDIDI
108. POTI
109. MIKHA TSKHAKAYA
110. KUTAISI
111. MAKHARADZE
112. KOBULETI
113. BATUMI
114. GORI
115. TBILISI
116. TELAVI
117. KARAYAZY
118. IDZHEVAN
119. LILIZHAN
120. ECHMIADZIN
121. YEREVAN
122. KAMARLU
123. ARARAT
124. NAKHICHEVAN'
125. MEGRI
126. KAZAKH
127. KIROVABAD
128. ALIABAD
129. NUKHA
130. AGDASH
131. GEOKCHAY
132. KUBA
133. KALAGAIN
134. DZHEBRAIL
135. ABDUL'YAN
136. SAL'YANY
137. BAKU

0 200 400 MILES
0 200 400 KILOMETERS

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Lithographed in the Reproduction Branch

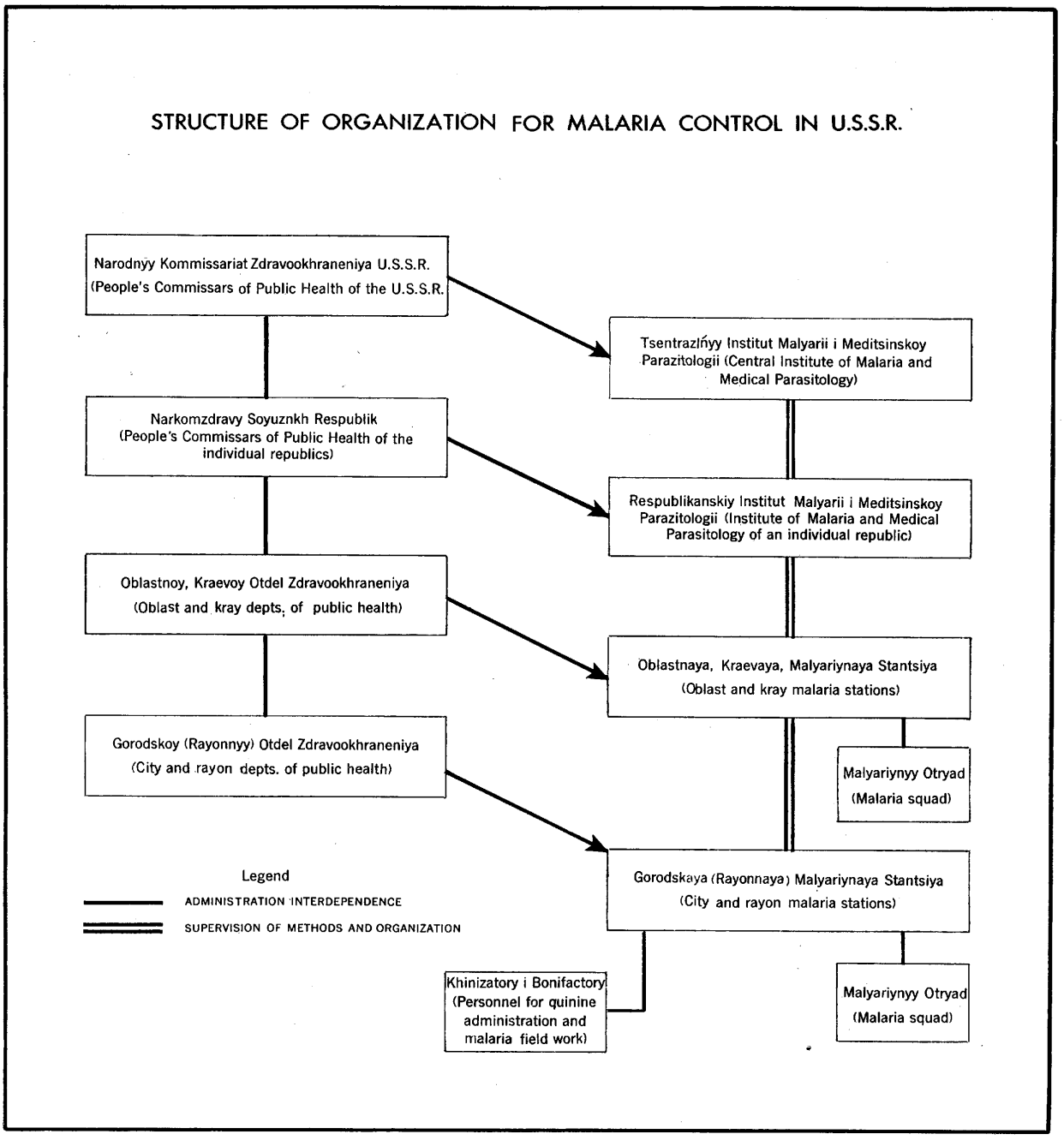

FIGURE XI - 9. *Organization for malaria control, U.S.S.R.*

are available. However, in Sevastopol' there were 200 to 250 cases of sandfly fever during July and August of 1932.

(3) Rickettsial diseases

(a) Typhus.—Famine, overcrowded living conditions, and migration of troops and civilians favor the appearance of louse-borne typhus epidemics. Conditions produced by civil war, such as dislocation of populations, helped spread the disease, and the U.S.S.R. experienced one of the greatest typhus epidemics known in history during 1919 to 1922. Although the figures are admittedly incomplete, some 20 million persons were estimated to have contracted the disease in those years. The morbidity rate in 1920 was said to be over 260 per 10,000 population. A graphic representation of typhus incidence in Russia from 1900 to 1936 is shown in FIGURE XI-10.

Since 1925 the morbidity rate for typhus has remained at a relatively low level for the U.S.S.R. as a whole, although some localities have had numerous cases at times; there were said to be 1,000 cases in the hospitals of Kuybyshev in March 1942, for example. A League of Nations report noted that in 1942 typhus was "markedly on the increase" in the endemic countries of eastern Europe, and it is probable that European U.S.S.R. shared this general trend because the sanitary and living conditions in such cities as Kazan', Leningrad, Moscow, and Penza had noticeably deteriorated.

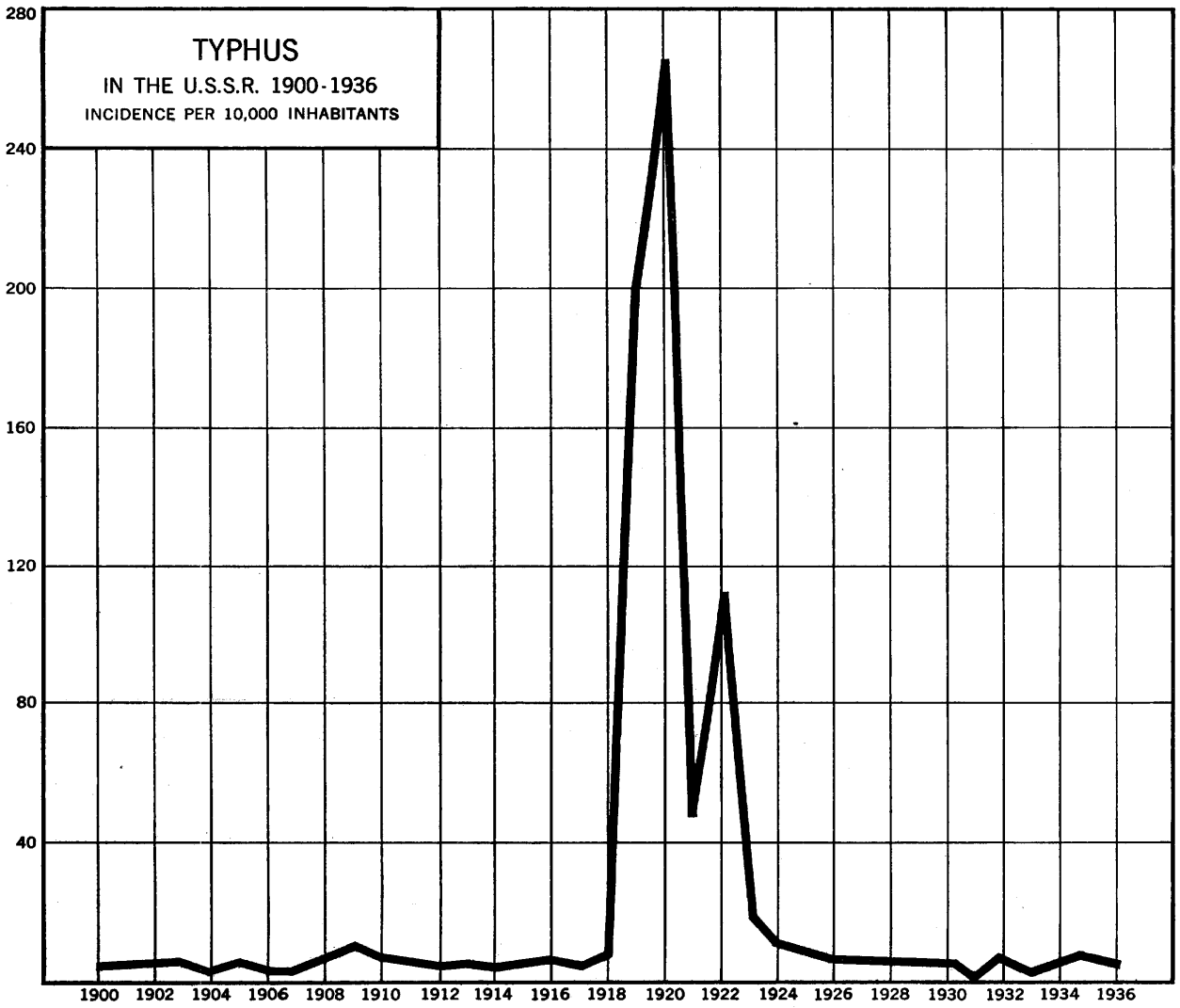

FIGURE XI - 10. *Typhus in the U.S.S.R.*
Incidence per 10,000 inhabitants, 1900-1936.

In all the epidemics mentioned above, the highest incidence of typhus occurred during the winter months.

Flea-borne (endemic or murine) typhus is a rare disease in the Soviet Union and particularly in European U.S.S.R. Only occasional cases have been reported, although many infected rats have been found in the larger cities. Tick-borne and mite-borne typhus are not reported from European U.S.S.R.

(b) Trench fever (Volhynian fever).—In World War I, enormous numbers of cases of a febrile disease appeared among troops on the German front in Poland and Volhynia. Because the disease attacked front-line troops almost exclusively it was spoken of as trench fever or Volhynian fever. A characteristic of the disease is pain in bones and joints not accompanied by signs of inflammation. Fever curves are very irregular, sometimes showing a sharp rise every five days (hence another name, "Five-day fever") and in other cases developing a typhoid-like pattern. Another characteristic is the frequency of relapses, which may come on after weeks or months.

The disease has been shown to be caused by an organism of the Rickettsia group, which is transmitted chiefly by the body louse, *Pediculus humanus corporis.* The organism is introduced by the bite of the louse or by rubbing louse feces into the skin when scratching.

Prevention of trench fever, like the prevention of typhus, depends upon delousing.

(4) Dysentery and diarrheas

(a) Dysentery.—Bacillary dysentery is endemic and large numbers of cases are seen annually, but the amebic form occurs only sporadically in European U.S.S.R. The following remarks refer to bacillary dysentery only. The types of organisms reported from the U.S.S.R. include the Flexner, Hiss(y), Shiga, Strong, and Stutzer-Schmitz strains.

The disease assumes epidemic proportions from time to time in various localities. The Ukrainian S.S.R. has continuously maintained a morbidity rate higher than that in the rest of the Soviet Union. The morbidity rates for the Ukraine from 1903 to 1917 ranged between 34.0 and 47.7 per 10,000 population. The case incidence in the U.S.S.R. was highest in 1913 and 1920, but no adequate figures are available for recent years. The number of cases was said to be high in 1940 and 1941 and the disease assumed epidemic proportions in the winter and spring of 1941 to 1942. Seasonal incidence in European U.S.S.R.

is greatest from June to September; in the Ukrainian S.S.R. the season extends into October.

Mortality rates for bacillary dysentery fluctuate within rather wide limits, but no reliable figures have been found to indicate case fatality rates. A large proportion of the deaths are reported to occur among young children and adults beyond the age of 50 years.

(b) Diarrheas.—Various forms of diarrhea and enteritis are commonly reported from all parts of the Soviet Union. In some instances this classification may erroneously include cases of the more serious enteric diseases. There have been reports of acute gastro-enteritis caused by *Staphylococcus aureus* carried by dairy products such as cheese, ice cream, custard, and pastries. The incidence of mild diarrhea is great, and is aggravated by poor water systems. Infections caused by *Salmonella breslau* or *S. suipestifer* also have been recorded.

(5) Frostbite

The effects of frostbite on the human and animal organism have been under extensive investigation in the Soviet Union since 1934. The investigations, experimental as well as clinical, were intensified during the Russo-Finnish war and during the fall, winter, and spring of the first year of the Russo-German war. The entire research was centralized under the People's Commissariat for Public Health, and the work has been carried on systematically throughout the war.

Studies on the effect of cold on the human organism demonstrate that adequate, warm clothing which does not interfere with circulation protects the wearer against frostbite. Footwear that is properly fitted and kept dry, and a diet high in fats and carbohydrates, were found to be essential. Various ointments used by infantrymen during severe frosts did not prove efficacious.

(6) Venereal diseases

No adequate data are available concerning the prevalence of venereal diseases in the U.S.S.R. as a whole, nor in European U.S.S.R., at the present time. It is believed that all five venereal diseases are present in sufficient numbers to constitute a threat to the health of personnel operating in the country despite the facts that prostitution is no longer officially sanctioned and that the Soviet Union has greatly increased the number of institutions for treatment and control of venereal diseases. Such statistics as are available refer only to cities in some instances, only to rural areas in other cases, and occasionally deal with venereal diseases in an all-inclusive manner without separate reference to the individual diseases. The number of cases reported includes only those patients who have sought treatment and have been officially registered.

The number of registered syphilis and gonorrhea patients per 10,000 population in the U.S.S.R. was reported for various years as follows:

Disease	1914	1928	1929	1930	1931
Syphilis	74.7	42.8	32.2	29.5	24.7
Gonorrhea	40.0	31.0	25.7	24.3	20.5

No similar figures are available for the other venereal diseases. It is stated that in 1936, the morbidity rate per 10,000 population in cities was 18.6 for syphilis and that the incidence of gonorrhea in 18 of the large cities of the U.S.S.R. in 1940 was 25.3% lower than the 1936 figure (which is not revealed). The morbidity rate in 1913 for chancroid in cities was 51.4 cases per 10,000 population. The incidence for only two cities is reported for 1931 when Moskva (Moscow) had 2.6 and Leningrad 1.8 registered cases per 10,000 population. In 1941 it was officially reported that only isolated cases of chancroid were found in the entire U.S.S.R.

The number of registered cases of venereal disease in the whole of Russia averaged 180.4 per 10,000 population in 1913. The figures for Moskva (Moscow) alone were stated to be 388.7 in 1914 and 75.1 in 1934, both per 10,000 population. No comparable data are available for recent years.

The Soviet Union officially does not sanction prostitution and has provided a program for the reeducation of prostitutes. The reduction of the number of infections acquired from prostitutes is exemplified by statistics concerning such infections in Moskva (Moscow), shown in TABLE XI-11.

TABLE XI - 11

NUMBER OF PATIENTS TREATED IN ANTIVENEREAL DISPENSARIES IN MOSKVA (MOSCOW), 1914 TO 1934

Year	Average number per 10,000 population			Percentage of patients infected by prostitutes as compared with 1914
	Total	Patients infected by prostitutes		
		No.	%	
1914	388.7	221.0	56.9	100.0
1925	190.0	60.0	31.6	27.1
1927	132.0	35.0	26.5	15.8
1934	75.1	9.0	12.0	4.1

The number of institutes doing antivenereal work is reported variously. Such institutions include the Central Institute for Skin and Venereal Diseases (established in Moskva (Moscow) in 1919); venereal disease clinics established by the various Constituent Republics, by the Provinces, and by regions; dispensaries established by districts; and aid stations. Apparently all of these units are included in the term "venerealogic institutions." In 1941 there were 2,605 venerealogic institutions under the supervision of the Narkomzdrav of the R.S.F.S.R. alone. The increase in the number of dispensaries and aid stations in European Russia from 1913 to 1941 is shown in TABLE XI-12.

TABLE XI - 12

NUMBER OF VENEREAL-DISEASE DISPENSARIES AND AID-STATIONS, 1913 TO 1941

U.S.S.R. and constituent republics	Number of institutions				
	1913	1928	1932	1938	1941
U.S.S.R.	12	800	683	1,351	1,498
R.S.F.S.R.	11	509	412	728	828
Ukrainian S.S.R.	1	205	146	282	295
White Russian S.S.R.	..	14	15	40	38
Karelo-Finnish S.S.R.	..	..	1	4	5
Moldavian S.S.R.	..	3	1	5	6

The functions of the venerealogic institutions include the registry, examination, and treatment of patients. Hospitalization is compulsory for patients found to have communicable forms of syphilis. Periodic examinations are conducted in schools, dormitories, and institutions, and antivenereal propaganda is disseminated by radio, cinema, newspapers, posters, and other means.

B. Diseases of potential military importance

(1) Endemic diseases

(a) Relapsing fever.—All parts of the U.S.S.R. have experienced epidemics of louse-borne relapsing fever at one time or another, but the morbidity rate has been highest in Leningrad, Moskva (Moscow), and the Ukrainian S.S.R. The disease appears to reach its highest level

in the winter and early spring months. The morbidity rate, which normally is between 1 and 2 per 10,000 population, has been as high as 117 per 10,000 population during some epidemics (1922). The mortality rate per 10,000 population, was 5.8 in Leningrad, 4.9 in Moskva (Moscow), and 6.8 in Odessa, during the last great epidemic of 1919 to 1922.

No recent information is available concerning the occurrence of relapsing fever in the U.S.S.R. The availability of salvarsan in sufficient quantity to treat such cases as do occur has reduced the threat of epidemic spread of the disease.

(b) Tick-borne encephalitis.—Encephalitis is indigenous to the forest regions of the Far East, Siberia, and parts of European U.S.S.R., including the Urals, Karelia, West Ukraine, and White Russia. Its seasonal incidence begins in April, increases to epidemic proportions in May, and reaches its height in June. Only sporadic cases occur between August and May. The greatest incidence and mortality occur in new settlements situated in virgin forests. The disease is contracted through the bite of infected ticks that live in the forest. The most important tick vector is said to be *Ixodes persulcatus,* the larvae of which also may be infected with the encephalitis virus. Other less important vectors are mentioned in Topic 111, C, (1), (*f*).

The virus of tick-borne or spring-summer encephalitis may be harbored by birds and animals, including certain rodents, goats, and sheep, all of which serve as reservoirs of infection for the ticks which transmit the disease to man. The eradication of rodents and ticks has proved effective in controlling spring-summer encephalitis. Prevention of the disease by means of a formolized vaccine prepared from the brains of infected animals has been reported in the Russian literature.

The fatality rate among patients who have contracted spring-summer encephalitis ranges from 20% to 30%. The disease appears to be less severe in European U.S.S.R. than in eastern Siberia. Patients who survive the disease may have residual paralysis and atrophy of the cervical muscles and those of the shoulder girdle.

(c) Asiatic cholera.—The U.S.S.R. has experienced many great epidemic outbreaks of cholera, the last of which occurred in 1921 to 1922, the number of cases then reaching 173,398. According to Russian reports, the disease has been under control since 1930. No cases have been reported after 1926.

The epidemic of 1921 to 1922 was centered in the area of European U.S.S.R. embracing Voronezh, Kursk, Tambov, and the Lower Volga region. The seasonal incidence is usually highest from June through August but in the regions just mentioned cases were reported in the winters of 1919 and 1920. In those epidemic years when famine occurred fatality rates averaged about 50%.

Even though water and sewerage systems have been improved since the last cholera outbreak, sanitation conditions are far from perfect, and cholera still must be considered a potential danger in the Soviet Union.

(d) Plague.—This disease occurs in the southeastern territories of the U.S.S.R. and in Zabaykal'ye (Transbaikalia); it is endemic in the Astrakhan' region where climatic conditions are favorable and great numbers of carriers are present among the local fauna. The number of cases reported for the years 1924 to 1927 inclusive were, respectively, 266, 257, 179, and 118 for all of U.S.S.R., and these were distributed over the following areas: Volga delta, Astrakhan' region, and Turkestan in 1924; Volga and Don valleys in 1925; northern banks of the Caspian Sea, northern Caucasus, Stalingrad area, Astrakhan' area, and the Ural valley in 1926; and the Ural valley in 1927. The location is not stated for 1928 to 1930 inclusive.

In the southeastern parts of European U.S.S.R., plague appears in the summer and fall when mice, rats, squirrels, and other rodents are abundant, and the flea population has greatly increased. The squirrel, *Citellus citellus,* is most numerous from March to July while the yellow sandmouse, *Pallasiomys meridianus,* is most abundant during the fall months. The rodents and fleas found in the U.S.S.R. are referred to in Topic 111, C, (1), (*d*) and (*h*), respectively. Various German investigators have reported the rodents which serve as intermediate hosts of plague in the Don and North Caucasus regions together with the more important species of fleas involved in the transmission of plague. The list from German sources is summarized in TABLE XI-13.

TABLE XI - 13

RODENTS AND FLEAS INCRIMINATED IN THE DISSEMINATION OF PLAGUE IN THE DON AND NORTH CAUCASUS REGIONS*

RODENTS		FLEAS
Families Subfamilies	Species	
Dipodidae	*Alactaga elater*	
	do. jaculus	
	Alactagulus acontion	*Meropsylla spp.; Ophthalmopsylla volgensis*
	Dipus sagitta	
	Scirtopoda telum	
Leporidae**	*Lepus europaeus*	
Muridae	*Rattus norvegicus*	*Ceratophyllus fasciatus*
	do. rattus	*Xenopsylla cheopis*
Cricetinae	*Cricetulus migratorius*	*Ctenophthalmus spp.*
	Cricetus cricetus	*Ctenophthalmus spp.*
Gerbillinae	*Meriones tamaricinus*	*Xenopsylla mycerini*
	Pallasiomys meridianus†	*Ceratophyllus laeviceps*
Microtinae	*Ellobius talpinus*	
	Lagurus lagurus	*Ceratophyllus consimilis*
	Microtus arvalis	*Ceratophyllus spp.;*
	do. socialis	*Ctenophthalmus spp.*
Murinae	*Mus musculus*	*Ceratophyllus mokrzeckyi; Ctenopsyllus segnis*
Sciuridae	*Citellus pygmaeus*††	*Ceratophyllus tesquorum; Neopsylla setosa*

* Compiled from German sources.
** Regarded by many as belonging to the Order Lagomorpha.
† Secondary plague reservoir.
†† Primary plague reservoir.

The Institute of Microbiology and Epidemiology in the city of Saratov reports that livestock as well as wild animals may become infected with plague. Domestic animals such as the cat and the dog may acquire the disease by direct contact from rodents they have caught; camels and donkeys become infected through ingestion of hay or other fodder contaminated with feces of rodent carriers. A source of infection for man is said to be the Kirghizean wheat, *Argyrophyllum arenarium,* which becomes contaminated with the feces of infected rodents. Workers in the wheat fields may acquire plague by inhalation of dust from such contaminated wheat.

(2) Diseases which may be introduced

Filariasis and kala-azar are endemic in the Caucasus, and Japanese B-encephalitis occurs in the Siberian Republics. The movement of troops and the migration of people from one part of the Soviet Union to another easily may introduce such diseases into European U.S.S.R. The introduction of *falciparum* malaria has been discussed in Topic 113, A, (1).

C. Diseases of minor military importance

(1) Typhoid fever

No data are available to show the incidence or prevalence of typhoid fever in recent years. Following the revolution of 1917, the morbidity rate increased considerably, reaching about 34 per 10,000 population in 1920, but official reports indicate a decreasing incidence after 1924. Fatality rates have always been higher in the smaller communities, probably because of inadequate medical care. Typhoid immunization is now practiced extensively throughout the U.S.S.R. and is compulsory for certain groups of workers living in camps. New water and sewerage systems have been built, and food inspection has been introduced. Despite these measures, typhoid fever remains an endemic disease in the Soviet Union and still represents a serious sanitation problem.

(2) Scarlet fever

The incidence of scarlet fever has fluctuated within wide limits in the U.S.S.R. for many years. In the period from 1920 to 1939, distinct peaks of increased incidence were noted in 1926, 1930, and 1936 with a maximum of 41 cases per 10,000 population in 1930. A study of the seasonal incidence of scarlet fever in the central zone of the R.S.F.S.R. during the period 1931 to 1937 showed that 36.2% of the cases occurred in the autumn (September to November inclusive), 27.4% in the winter (December to February inclusive), 21.3% in the spring (March to May, inclusive), and 15.1% in the summer (June to August inclusive). School children make up the majority of cases occurring in the autumn. Fatality rates appear to be highest in winter and spring, and lowest in autumn. Mortality is highest in infants under the age of one year, and next in the age group of one to five years.

Some attempts to control the disease have been made in cities where mass immunizations have been carried out. Immunization of children is carried out by institutions for the protection of infancy and childhood and by the increasing number of nurseries.

(3) Diphtheria

The incidence of diphtheria has been below 10 per 10,000 population in the U.S.S.R. for many years. The last noticeable increase in incidence of diphtheria was noted in 1931 to 1932. A study of the seasonal incidence of diphtheria in the central zone of the R.S.F.S.R. during the period 1931 to 1937 showed that 34.5% of cases occurred in the autumn, 28.4% in winter, 22.3% in spring, and 14.8% in summer. Among children below three years of age, diphtheria is more common in winter than in spring; in the age group of three to four years, the winter and fall incidences are about even; in the age group of five to seven, the autumn incidence shows a marked increase (31.1% of reported cases); and the age group of eight to fourteen has the highest morbidity in the autumn (43.5% of reported cases). Fatality rates appear to be highest in winter and spring, and lowest in autumn. Mortality is highest in infants under the age of one year and next highest in the age group of one to five years.

Immunization against diphtheria is compulsory throughout the U.S.S.R. However, the incidence of the disease increased in 1942, and remained at a high level in 1943. Inadequate immunization and late hospitalization have been blamed for this state of affairs. In addition, the quality of diphtheria vaccine was said to be poor during World War II.

(4) Measles

No comprehensive data are available, but it is said that the morbidity and mortality rates for measles had noticeably increased during World War II. The incidence reported for the U.S.S.R. reached about 66 per 10,000 population in 1930, then declined sharply but in 1936 was on the increase again.

D. Diseases common among the civil population

(1) Tuberculosis

Tuberculosis long has occupied a leading place as a cause of death in Russia. The number of registered cases has increased annually, probably as a result of improved methods of diagnosis and increasing efforts to discover cases. The incidence of tuberculosis in the country as a whole from 1900 to 1929 is recorded in TABLE XI-14.

TABLE XI - 14

TUBERCULOSIS IN SOVIET RUSSIA, 1911 TO 1929

Year	Pulmonary form		Other forms	
	No. of cases	Cases per 10,000 pop.	No. of cases	Cases per 10,000 pop.
1911	676,602	47.3	289,462	18.0
1912	775,123	53.0	309,960	18.9
1913	824,817	55.3	315,728	19.4
1914	775,904	51.6	. .	. .
1915 to 1920 - No information available.				
1921 to 1925 - Registration incomplete.				
1926	940,893	65.4	307,059	21.4
1927	1,326,204	90.1	458,460	31.2
1928	1,361,268	90.5	457,120	30.4
1929	1,385,905	90.3	491,969	32.1

It is stated on questionable authority that in 1913 the death rate per 10,000 population for pulmonary tuberculosis alone in Moskva (Moscow) was 22.6; in St. Petersburg (now Leningrad), 28.6; in Saratov, 29.9; and in Yaroslavl', 30.9. Mortality rates for tuberculosis (all forms) have been recorded for the city of Moskva (Moscow) from 1911 to 1931, and for purposes of comparison, similar rates for Berlin, London, and New York are included in TABLE XI-15.

TABLE XI - 15

TUBERCULOSIS MORTALITY RATES PER 10,000 POPULATION IN SELECTED CITIES, 1911 TO 1931

Year	Berlin	London	Moscow	New York
1911	19.9	17.7	26.9	21.0
1912	19.3	17.1	28.1	20.1
1913	18.4	16.5	26.6	19.9
1914	19.4	17.7	24.9	20.0
1915	20.7	18.9	23.6	19.6
1916	22.2	17.4	24.4	18.2
1917	32.3	18.9	23.2	18.8
1918	32.0	19.1	20.2	18.4
1919	27.3	13.9	28.5	15.2
1920	17.6	12.8	39.7	12.5
1921	15.0	12.8	24.5	10.2
1922	16.6	12.8	26.1	9.7
1923	18.4	11.6	18.0	9.3
1924	14.9	11.6	16.8	9.0
1925	12.4	11.2	16.0	8.6
1926	10.7	10.3	14.8	8.5
1927	10.7	10.5	15.7	7.8
1928	10.1	10.4	15.5	7.9
1929	11.5	10.3	15.6	7.5
1930	9.1	9.9	15.2	7.3
1931	9.1	10.2	14.6	6.9

In 1918 a Central Tuberculosis Institute was established in Moskva (Moscow) by the Commissariat of Public Health of the U.S.S.R. The Institute has an experimental department devoted to research in the pathological anatomy, physiology, microbiology, and epidemiology of tuberculosis. It has a clinical department for the study of pulmonary tuberculosis, bone tuberculosis, and tuberculosis of children. In 1937 the Institute controlled five sanatoria, of which three were for children and two for adults.

The constituent republics have established Central Tuberculosis Institutes in Kharkov, Minsk, Tbilisi (Tiflis), Samarkand, and Alma-Ata, and regional institutes have been organized in Moskva (Moscow), Ivanovo, Kazan', Sverdlovsk, and in many other places. All the tuberculosis institutes give postgraduate courses to physicians and train about 500 specialists a year. Dispensaries and sanatoria employ about 27,000 physicians, all of whom have had some specialized training.

The basic unit in the campaign against tuberculosis is the dispensary, of which there are two types. About half of the dispensaries are independent organizations (TABLE XI-16); the other half are operated in connection with health centers. No dispensary has fewer than 10 to 25 physicians. There is generally one dispensary for every district of 150,000 to 350,000 inhabitants; Moskva (Moscow) has 20 dispensaries. Rural regions have or will have a dispensary for each rayon.

TABLE XI - 16

NUMBER OF INDEPENDENT TUBERCULOSIS DISPENSARIES AND AID STATIONS, 1913 TO 1941

U.S.S.R. and constituent republics	Year				
	1913	1928	1932	1938	1941
U.S.S.R.	43	498	498	925	1,048
R.S.F.S.R.	36	286	281	587	669
Ukrainian S.S.R.	5	161	151	287	238
White Russian S.S.R.	2	15	16	22	29
Karelo-Finnish S.S.R.	..	1	1	2	4
Moldavian S.S.R.	..	1	..	4	5

The dispensary keeps an individual record of all patients in the area under its jurisdiction. The patient is under obligation to follow the instructions of the dispensary doctor. If he refuses to accept the treatment prescribed, he is denied a certificate entitling him to sick benefits during his illness. The dispensary registers patients, arranges for treatment, and keeps patients and contacts under observation. The district nurse calls regularly on those patients who are living at home, educates families in hygienic measures which will safeguard others from the disease, and sends contacts to the dispensary for X-ray examination.

In the whole Russian empire in 1914, there were only 43 tuberculosis dispensaries and 18 sanatoria with 307 free beds. In the area of the R.S.F.S.R. where there were only four tuberculosis dispensaries in 1914, the number had increased to 84 by 1924 and to 500 by 1936. In 1936 the total number of such dispensaries in the Soviet Union was 750. They were equipped with X-ray and laboratories, and generally had their own clinical facilities. Where such facilities were lacking, the dispensaries had at their disposal observation wards, clinics, hospitals, research institutes, or sanatoria, which were bound to accept any patients recommended by the dispensaries.

Existing sanatoria have an inadequate number of beds for open tuberculosis cases. In 1936, there were about 35,000 beds in the R.S.F.S.R. and some 6,000 such beds in the Ukrainian S.S.R. Special institutions called luposoria have been established for the treatment of cutaneous tuberculosis. There were three luposoria in 1934; one with 170 beds in Leningrad, one with 120 beds in Moskva (Moscow), and one with 30 beds in Sverdlovsk. A labor colony where patients may find employment is attached to the Moskva (Moscow) institution.

The antituberculosis campaign was somewhat disrupted by the war which broke out in 1941, but by 1944 the rising incidence of the disease was once more reduced to the 1941 level. Early in 1943 hospital accommodations for tuberculosis cases were increased, and patients were granted extra rations. Workers with a history of tuberculosis were not required to work night shifts or to engage in trades that might be harmful to health. In some cases, their working day was shortened without reduction of wages and, when necessary, they were given care in so-called night sanatoria established by various factories.

(2) Helminthiasis

Intestinal worm infections are common throughout the Soviet Union, but no adequate studies have been made by Russian or other scientists to establish an adequate picture of the prevalence of the different varieties of helminth infections. It is stated that nearly 100% of the population of the central part of European U.S.S.R. are infected with *Enterobius vermicularis* and that about 80% of the people have *Ascaris lumbricoides* infection. Other nematodes found in central European U.S.S.R. include *Trichostrongylus instabilis, T. orientalis, T. probolurus,* and *T. vitrinus.*

Tapeworms are much more common in the northern regions of the country. An examination of children in Moskva (Moscow) in 1936 showed 3% to be infected with *Hymenolepis nana.* The pork tapeworm, *Taenia solium,* is not as prevalent as the beef tapeworm, *Taenia saginata.* Infection with *Echinococcus granulosus* appears to be endemic in the Baltic areas from which occasional cases of *Necator americanus* infection are reported. *Fasciola hepatica* infections are rather frequently found in the region of Ivanovo. *Dicrocoelium lanceatum* infections are reported from the Donbass region, Ivanovo, Moskva (Moscow), Penza, Sverdlovsk, and Kalinin.

In the northern part of European U.S.S.R., infections with *Enterobius vermicularis* and *Diphyllobothrium latum* have been commonly reported among the populations of Arkhangel'sk, Leningrad, and the Karelo-Finnish S.S.R. Examination of fishes from the Neva (river) showed *Diphyllobothrium latum* in 50% to 82% of the bass, perch, and ruffs examined; in 50% to 91% of the burbot, eelpout, and lings; and in 100% of pickerel and pike examined.

Helminth infections in the White Russian S.S.R. appear to parallel the figures reported for the central part of European S.S.R. with the addition of *Trichinella* infections. Cases of loiasis have been reported from Astrakhan', Zaporozh'ye, Khar'kov, Krasnodar, and from some localities of the Asiatic republics.

(3) Influenza

Influenza is an endemic disease throughout the entire territory of the Soviet Union. European U.S.S.R., like the rest of Europe, experienced a particularly severe epidemic during the years following World War I.

The morbidity rate in "normal" years seldom is lower than 200 per 10,000 population, and was 400 to 500 per 10,000 population in 1929 to 1930. In absolute numbers, 3,500,000 to 5,000,000 cases of influenza per year are not unusual. Although the highest incidence of influenza in southern regions as a rule occurs in February and March, the northern regions may have a maximum number of cases in January, and maintain a high morbidity rate even as late as April.

E. Miscellaneous diseases

(1) Tularemia

The spread of tularemia from Asia into Europe has taken place within the past 20 years. The first epidemic of tularemia in the U.S.S.R. occurred in 1926 when numerous epidemic outbreaks, mainly in regions along the Dnepr (Dnieper), Don, Kuban', Ural, and Volga rivers were recorded. The incidence of tularemia in 1941 in the southeastern part of European U.S.S.R. was greater than ever has been observed in Europe or North America (TABLE XI-17).

In the 1926 outbreak the water rat (*Arvicola amphibius*) was considered the main reservoir of infection, but by 1940 it was established that the field mouse (*Microtus arvalis*) and the house mouse (*Mus musculus*) were predominant as carriers of the disease. Because of lack of storage space in 1941, crops were only partially harvested, and those which were left in the fields furnished favorable conditions for the increase of the number of rodents.

The southeastern part of European U.S.S.R. offers conditions favorable to the maintenance of a large rodent population and may become a permanent focus of tularemia infection.

TABLE XI - 17

TULAREMIA EPIDEMICS IN EUROPEAN U.S.S.R.

Year	Region involved	Cases	Carriers
	DNEPR (DNIEPER) VALLEY		
1935	Between Cherkassy and Kanev	..	Water rats
1935-36	Cherkassy and vicinity	100	Water rats
1941	Bobruysk, Gomel', and Sumy	..	Field mice
1941-42	Khar'kov, Kursk, and Shchigry	..	Field mice
1942	Right bank of Dnepr (Dnieper) around Kirovograd	100	Water rats
	DON VALLEY		
1932-33	Rostov-na-Donu	..	Water rats, rabbits
1933-42	Azov, Novocherkassk, Rostov-na-Donu, and Voronezh	..	Water rats, field and house mice
1941-42	Rostov-na-Donu and vicinity	37,000	Field and house mice
1941-42	Voroshilovgrad	1,508	Field mice
	KUBAN' VALLEY		
1938	Aleksandrovskiy	..	Unknown
1940-41	Entire Kuban' Valley	34,206	Field mice, rats, cats, hares, squirrels
	URAL VALLEY		
1928	Eight villages near Chkalor	103	Water rats
	VOLGA VALLEY		
1926	Bolshoy, Churki, and Mogol	200	Water rats
1928	Villages on Oka (river)	800	Water rats
1934	Stalingrad	..	Squirrels
1938-41	Orël	5,000	Field mice
1942-43	Orël	..	Field mice

(2) Leprosy

In 1939, according to official Russian sources, there were some 3,000 cases of leprosy in the entire territory of the U.S.S.R., of which about 1,000 were in Turkestan, 700 in the Caucasus area, and 600 in the Estuary region of the Volga. Astrakhan' is one of the important foci of the disease. In 1923 it was estimated that there were between 250 and 500 lepers in the Astrakhan' area; in 1926 the estimate ranged from 500 to 600. About 30 cases were reported from Saratov in 1926 and some cases from a few of the villages around Stalingrad.

Second to the lower Volga valley in the incidence of leprosy is the Kuban' valley where the disease is known as "Krymka," probably because it was thought to have been introduced from the Crimea. The number of lepers in the Kuban' area in 1901 was 187, and in 1926, 175; the greatest number reported in 1913 was 289. Most of the lepers were found among the rural population.

Sporadic cases of leprosy have been reported from the Crimea, Odessa, the Don valley, and the Caucasian Republics. There are no official statistics concerning the number of lepers in the Baltic Republics. In 1936 Russian sources estimated that there were 226 lepers in Estonia, 210 in Latvia, and 21 in Lithuania.

Institutions for the care of lepers have been established in Astrakhan', Leningrad, Moskva (Moscow), and the Ukrainian S.S.R.

(3) Trachoma

The officially reported number of trachoma cases in the whole of Russia in 1913, admittedly based on incomplete registrations, was 1,029,333. Of this number 885,789 were registered in European Russia. In some areas such as that which now makes up the Chuvash A.S.S.R. and the Tatar A.S.S.R., it was said that nearly 25% of the population were trachomatous.

The number of cases reported for the U.S.S.R. in 1927 was 846,750. The reduction in the number of cases, as compared with 1913, was most noticeable in those regions where the disease formerly was particularly prevalent; namely, the Chuvash A.S.S.R., Mari A.S.S.R., and Udmurt A.S.S.R., and surrounding areas.

(4) Smallpox

The formerly large number of smallpox cases reported annually has dwindled to a negligible figure since the advent of compulsory vaccination in the U.S.S.R. No data are available for recent years, but in 1938 the total number of cases in the whole of the U.S.S.R. was officially reported as 223. The smallpox incidence per 10,000 population reached a maximum of 14 in 1919, but has since declined steadily except for an outbreak in 1932.

(5) Rabies

There are still many rabid dogs, cats, and wolves in the country, and about 70,000 people are bitten every year. There are several Pasteur Institutes in the U.S.S.R.; the three most important are in Moskva (Moscow), Leningrad, and Rostov-na-Donu (Rostov-on-Don).

(6) Anthrax

Anthrax still occurs in cattle breeding regions. The morbidity rate for this disease is about 1 per 10,000 population. In rural regions the greatest number of infections are observed during the summer months. In 1938, the entire U.S.S.R. had 2,558 cases of anthrax, of which 385 were reported from the Ukrainian S.S.R., and 16 from White Russian S.S.R.

114. THE BALTIC REPUBLICS

The Estonian S.S.R., Latvian S.S.R., and Lithuanian S.S.R. comprise the Baltic Republics. Available data concerning these territories are incomplete and inconclusive. Official reports made to the League of Nations during the few years these countries were independent States constitute the major source of information for this discussion. Late in 1939 these territories were occupied first by the U.S.S.R., then by the Germans; and finally by the Russians who incorporated them into the Soviet Union. No information concerning medical and sanitary conditions in the Baltic Republics has been reported by Russian sources.

Such information as has been found concerning the Karelo-Finnish S.S.R. has already been cited. The only available data referable to the Estonian S.S.R. deal with the number of cases of certain diseases in 1929; these are summarized in TABLE XI-18.

TABLE XI - 18

INFECTIOUS DISEASES REPORTED IN THE ESTONIAN S.S.R., 1929

Diseases	Cases		Deaths	
	No.	Morbidity rate per 10,000 pop.	No.	Fatality rate
Typhoid fever	471	4.22	37	7.9
Paratyphoid fever	202	1.81	19	9.4
Measles	3,705	33.21	48	13.1
Scarlet fever	2,179	19.53	(?)	..
Diphtheria	405	3.63	(?)	..
Influenza	1,425	12.77	(?)	..
Dysentery	11	0.10	3	27.3
Leprosy	19	0.17	4	21.0
Erysipelas	44 (?)	0.39 (?)	(?)	..
Encephalitis lethargica	1	0.01	(?)	..
Epidemic meningitis	22	0.20	(?)	..
Tuberculosis, respiratory	1,532	13.73	(?)	..
Tuberculosis, meninges & CNS	2	0.02	(?)	..
Syphilis	1,118	10.02	8	0.7
Soft chancre	95	0.85	(?)	..
Gonococcus infection	3,660	32.81	(?)	..

Data referring to the Latvian S.S.R. include a report of the number of doctors and dentists registered in 1938, and the hospitals and diseases reported for 1929. Of the 1,566 physicians reported in 1938, there were 1,092 males and 474 women. The distribution of physicians and dentists in the Latvian S.S.R. shows a large concentration in Riga and a few other cities, with the remainder scattered among smaller towns and rural areas (TABLE XI-19).

TABLE XI - 19

DISTRIBUTION OF DOCTORS AND DENTISTS IN THE LATVIAN S.S.R., 1938

Location	Doctors		Dentists	
	No.	%	No.	%
Riga	830	53.0	489	60.4
Liepaja	86	5.5	33	4.1
Daugavplis	64	4.1	35	4.3
Jelgava	45	2.9	24	2.9
Small towns and rural areas	541	34.5	229	28.3

The Latvian S.S.R. in 1929 had 65 general hospitals with nearly 5,000 beds, a ratio of 26.25 beds per 10,000 population. Next in bed capacity were 6 lunatic asylums with 2,334 beds, a ratio of 12.28 beds per 10,000 population. Specialized hospitals, sanatoria, and convalescent homes comprise the remaining institutions, all of which are listed in TABLE XI-20.

TABLE XI - 20

HOSPITALS AND OTHER MEDICAL INSTITUTIONS IN THE LATVIAN S.S.R., 1929

Institutions		Beds	
Type	No.	No.	Ratio per 10,000 pop.
General hospitals	65	4,988	26.25
Surgical hospitals	13	324	1.71
Gynecological hospitals	11	162	0.85
Maternity hospitals	3	11	0.06
Children's hospitals	1	465	2.45
Hospitals for contagious diseases	3	70	0.39
Leper hospitals	2	220	1.16
Venereal diseases hospitals	1	120	0.62
Hospital for nervous diseases	1	30	0.16
Lunatic asylums	6	2,334	12.28
Eye hospitals	2	21	0.11
Tuberculosis hospitals	1	150	0.79
Sanatoria for pulmonary tuberculosis	10	408	2.15
Sanatoria for bone tuberculosis	2	151	0.79
Sanatoria for internal diseases	3	58	0.31
Sanatoria for respiratory and nervous diseases.	1	24	0.13
Sanatoria for children with pulmonary tuberculosis	3	240	1.26
Sanatoria for children with bone tuberculosis	1	60	0.32
Sanatoria for debilitated children	1	27	0.14
Institutes for hydrotherapy and dietetics	3	90	0.50
Convalescent homes	7	307	1.62

The number of cases (and deaths) of certain infectious diseases in 1929 as reported to the League of Nations for Latvian S.S.R. are recorded in TABLE XI-21.

TABLE XI - 21

INFECTIOUS DISEASES REPORTED IN THE LATVIAN S.S.R., 1929

Diseases	Cases		Deaths	
	No.	Morbidity rate per 10,000 pop.	No.	Fatality rate
Typhoid fever	619	4.84	94	15.2
Typhus	25	0.13	3	12.0
Malaria	5	0.03	0	0
Measles	302	1.59	8	2.6
Scarlet fever	942	4.96	11	1.2
Whooping cough	245	1.29	12	4.9
Diphtheria	277	1.46	26	9.4
Influenza	1,797	9.46	6	0.3
Dysentery	22	0.12	1	4.5
Leprosy	276	1.45	28	10.1
Erysipelas	276	1.45	27	9.8
Poliomyelitis	134	0.71	21	15.7
Encephalitis lethargica	9	0.05	6	66.7
Epidemic meningitis	85	0.45	36	42.4
Anthrax	2	0.01	0	0
Tuberculosis, respiratory	4,495	23.66	379	8.4
Tuberculosis, miliary	36	0.19	8	22.2
Tuberculosis, bone	768	4.04	15	1.9
Tuberculosis, other	564	2.97	42	7.5
Syphilis	1,192	6.27	17	1.4
Soft chancre	160	0.84	0	0
Gonococcus infection	1,566	8.24	0	0

The Lithuanian S.S.R. is essentially an agricultural country. The 1923 census showed that 76.7% of the inhabitants live in the rural areas and engage in agricultural activities. The 1938 population estimate was

2,549,668. In 1929 there were 22 rural health centers under the jurisdiction of the Department of Labor and Social Insurance (supervised by the Ministry of the Interior) conducted by the Union of Maternity and Child Welfare Organizations. The hospitals and other medical institutions in the Lithuanian S.S.R. in 1929 are listed in TABLE XI-22.

TABLE XI - 22

HOSPITALS AND OTHER MEDICAL INSTITUTIONS IN THE LITHUANIAN S.S.R., 1929

Institutions		Beds	
Type	No.	No.	Ratio per 10,000 pop.
General hospitals	41	1,889	8.19
Mental hospitals	2	500	2.46
Children's hospitals	2	80	0.32
Hospitals for contagious diseases	1	50	0.21
Tuberculosis hospitals	2	72	0.31
Homes for lepers	1	20	0.08
Gynecological and obstetrical hospitals	8	172	0.74
Maternity hospitals	2	17	0.07
Eye hospitals	2	45	0.18
Total	61	2,915	12.58

In 1938 some 210 health stations were opened, each serving an average of 10,000 inhabitants. Patients afflicted with venereal diseases were given free treatment. The number of cases of certain infectious diseases as reported in 1929 to the League of Nations is listed in TABLE XI-23.

TABLE XI - 23

INFECTIOUS DISEASES REPORTED IN THE LITHUANIAN S.S.R., 1929

Diseases	Cases		Deaths	
	No.	Morbidity rate per 10,000 pop.	No.	Fatality rate
Typhoid fever	1,013	4.37	28	2.8
Typhus	420	1.81	35	8.3
Relapsing fever	1	..	0	0
Smallpox	1	..	0	0
Measles	749	3.23	4	0.5
Scarlet fever	1,094	4.72	16	1.5
Whooping cough	1,015	4.37	6	0.6
Diphtheria	555	2.39	26	4.7
Influenza	5,883	23.39	19	0.3
Dysentery	79	0.34	15	19.0
Leprosy	2	..	0	0
Erysipelas	414	1.74	1	0.2
Epidemic meningitis	51	0.22	11	21.6
Rabies	1	..	1	100.0
Tuberculosis, all forms	1,051	4.53	31	2.9
Syphilis	1,749	7.54	0	0
Soft chancre	48	0.26	0	0
Gonococcus infection	1,637	7.66	0	0

115. RECOMMENDATIONS

The following recommendations are for personnel operating in European U.S.S.R. and are intended to supplement the general sanitary precautions ordinarily in force in all areas.

A. Water

All water supplies should be considered unsafe as found. Some municipal systems may be properly equipped to produce safe water, but it should not be considered safe until a thorough sanitary engineering survey has shown that the system is properly located and constructed, and that proper operating practices, including adequate analytical control, are in effect.

B. Waste disposal

Except in larger cities and a few towns, sewage-disposal systems may be considered inadequate or nonexistent. Hence, suitable plans must be made for local waste disposal wherever troops may be stationed outside those cities with sewerage systems. Careful waste disposal is of essential importance in view of the prevalence of enteric infections.

C. Food sanitation

Because of the prevalence of flies and the high incidence of enteric infections, special care must be exercised in the storage, handling, and preparation of food in military installations. Artificial ice, if used to chill drinks or food, should not be used in such a way as to contaminate the food or drinks, or their containers. Personnel should be cautioned as to the risk of eating in other than approved establishments. Native employees of the military forces should be examined periodically for evidence of intestinal infections. Recommendations given for the control of flies (Subtopic G below) are especially important for the protection of food from contamination.

D. Venereal disease control

Venereal diseases are sufficiently prevalent to warrant control measures. Adequate supplies of prophylactic materials will be needed, and easily accessible prophylactic stations should be established. Comprehensive educational programs and adequate recreational facilities are important. To a great extent the success of control measures will depend upon the accessibility and efficiency of prophylactic stations and on the availability of prophylactic devices.

E. Prevention of frostbite

The winters are extremely severe in most of European U.S.S.R. Suitable precautions must be taken to avoid frostbite whenever troops are exposed to temperatures below 20° F. Proper clothing includes long underwear, shoes roomy enough to allow the wearing of two pairs of wool socks, windproof jackets, and warm clothing. Frostbite of the uncovered parts of the face cannot always be avoided. Frequent warming of the face by covering with the hand is necessary. The wearing of a mask has some disadvantages. It protects the face but often becomes frozen after saturation with vapor from the expired air.

Tight shoes, straps, or leggings, or even too many socks or wrappings may reduce circulation and cause the toes or feet to be frozen. Ski-trooper's trousers with knitted cuffs protect against the wind and prevent snow from sifting into the boot. Stamping and moving the toes inside the boots improve the circulation and help prevent frostbite.

F. Control of mosquito-borne diseases

Mosquito control is of paramount importance in European U.S.S.R. from April through October. Control measures should include:

1) Elimination of mosquito breeding.
2) Location of camp sites preferably one or two miles from important breeding places and human habitations so as to be beyond the effective flight range of mosquitoes.

3) Screening of military buildings and use of mosquito sprays where needed. As soon as possible after arrival in a new area, all habitations for troops should be treated with DDT residual spray. Entrance vestibules with a screened door at each end (mosquito lock) will prove invaluable in excluding mosquitoes from buildings.

4) Liberal use of insect repellents.

5) Wearing of protective clothing such as long-sleeved shirts, trousers, and high shoes after sundown in mosquito-infested areas. Head nets and mosquito gloves hould be worn, when feasible, by personnel especially exposed to mosquitoes.

6) Use of bed nets issued as individual equipment.

7) Provision of a supply of antimalarial drugs sufficient for 100% suppressive treatment to be used at the discretion of the surgeon.

G. Control of flies

Because of the prevalence of enteric diseases, fly control is imperative during the summer months. Thorough screening of buildings, mess halls, kitchens, and latrines is necessary. In addition, all garbage should be deposited within covered containers and disposed of by burial or incineration. The use of DDT residual spray should constitute an essential part of all fly-control programs. In mess halls and kitchens, it is advisable to apply the residual spray thoroughly to the walls, window and door screens, ceilings, crossbeams, light wires, light cords, and similar places where flies rest or where fly specks are seen. All food, cooking equipment, eating utensils, and tabletops must be covered before spraying is begun. All breeding places and their immediate surroundings, where the newly emerged adult flies may alight, should be treated with DDT.

H. Sandfly control

Sandflies are known to exist in the Crimea, and the possibility that sandfly fever may occur must not be overlooked. The disease may cause a high ineffective rate in military personnel. The sandflies are too small to be restrained by ordinary mosquito-netting. Recommended measures to control sandflies include:

1) An insect repellent issued by the quartermaster is effective in protecting from bites of sandflies. It should be applied to exposed parts of the body. One application is effective for three or four hours.

2) Spraying of the walls of tents or dwellings with DDT residual spray furnishes effective protection.

3) Metal screening also may be sprayed or painted with DDT. Sandflies which attempt to pass through the mesh will be killed.

4) Care should be taken to choose a camp site on high, dry ground with good ventilation.

5) The ground surrounding the camp site should be cleaned of rubbish. Crevices in buildings or in the ground may serve as breeding spots and should be filled, smoothed, or treated with DDT.

6) Use of bed nets of special sandfly mesh.

I. Control of louse-borne diseases (typhus and relapsing fever)

Enforcement of the utmost personal cleanliness possible under the circumstances is essential. Ample facilities for bathing and laundering are urgently necessary. Complete equipment for delousing clothing, bedding, and other garments, and facilities for disinfestation of personnel should be provided. Delousing powder to be dusted into the clothing should be available. Typhus immunization is essential. Adequate stocks of vaccine for stimulating doses should be maintained.

J. Control of tick-borne disease

Spring-summer encephalitis is acquired from ticks in forested areas. Control measures include the use of an insect repellent, wearing of protective clothing, rodent control, and the burning of grass around encampments.

K. Control of flea-borne diseases

Rodents and fleas are prevalent in European U.S.S.R. Plague is endemic in southeastern European U.S.S.R. and occurs in epidemic outbreaks from time to time. All buildings should be of ratproof construction so far as possible, and rat-control programs should be enforced in all camps. Native public buildings, habitations, and warehouses should be considered as harboring rats and other vermin. Such buildings should be sanitized before use for living quarters or offices. Adequate stocks of plague vaccine should be available for use as a control measure in the event of a plague outbreak.

L. Cholera control

Cholera has been endemic in the Soviet Union. Because of the ease with which it could appear in epidemic form as a result of break-down in the usual sanitation procedures, preventive measures are indicated. All medical officers should be alert to detect the disease and, if it occurs among either military or civilian personnel, stimulating doses of vaccine should be administered to all troops. Strict attention to water and food sanitation, to disposal of excreta, and to control of flies (Topic 115, A, B, C, and G) will be essential to reduce the risk of spread.

116. PRINCIPAL SOURCES

A. Evaluation

Officially reported Russian statistics have been used to a considerable extent although their reliability is not always clear. Russian medical statistics under the Soviet regime frequently compare morbidity and mortality figures with those of the Tsarist regime and such comparisons usually glorify the achievements of the present governmental system. The recording of cases and deaths due to the various diseases is not universally practiced and officially reported statistics are correspondingly incomplete. It is not known how much of the failure to present comprehensive statistics may be based on a desire to credit local health organizations with effective disease-control measures. If bias exists in official reports, it is no less evident in many reports from non-Russian sources which often are either so laudatory or so derogatory in tone as to cause one to suspect their reliability.

Only a limited amount of original Russian source material is available in the United States and almost no pertinent medical reports written since the onset of World War II have been found. Free use has been made of information obtained in interviews with persons who have lived or visited in the U.S.S.R.

B. List of references

1. Akhundov, A. I. and Trofimov, G. K.
OB ISPOLZOVANII OTKHODA NEFTEPERERABOTKI "ZELENOE MASLO" PROTIV LICHINOK MALYARIYNYKH KOMAROV (Use of the petroleum by-product called "green oil" for mosquito larvae control). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 1, pp. 53-56. Moscow. 1944.

2. ———
PRIMENENIE OTKHODA NEFTEPERERABOTKI "ZELENOE MASLO" PROTIV OKRYLENNYKH KOMAROV (Employment of the petroleum by-product "green oil" for adult mosquito control). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 1, pp. 56-57. Moscow. 1944.

3. Aksenov, E. E.
PROFILAKTIKA PISHCHEVYKH OTRAVLENIY (Prophylaxis of food poisonings). "Medgiz," 109 pp. Moscow. 1940.

4. Almazova, V. V.
FENOLOGIYA "ANOPHELES MACULIPENNIS" MEIG. V MOSKOVSKOY OBLASTI (Phenology of *Anopheles maculipennis* Meig. in the oblast of Moscow). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 4, pp. 26-37. Moscow. 1944.

5. Ansheles, I. M.
EPIDEMIOLOGICHESKAYA KHARAKTERISTIKA LENINGRADA ZA GOD OTECHESTVENNOY VOYNY (Epidemiological characteristics of Leningrad during one year of the "Patriotic War"). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 7-8, pp. 79-92. Moscow. 1943.

6. Babskiy, E. B., Kochergin, I. G., Parin, V. V.
DOSTIZHENIYA SOVETSKOY MEDITSINY V GODY OTECHESTVENNOY VOYNY (Accomplishments of Soviet medicine during the years of the "Patriotic War"). "Medgiz," 179 pp. Moscow. 1944.

7. Baranskiy, N. N.
EKONOMICHESKAYA GEOGRAFIA (Economic geography). "Uchpedgiz," 372 pp. Moscow. 1937.

8. Barinskiy, F. G. and Dodonova, O. N.
DETSKIE INFEKTSII I BORBA S NIMI V SSSR V GODY VELIKOY OTECHESTVENNOY VOYNY (Childhood infections and their control in the U.S.S.R. during the "Great Patriotic War"). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 1-2, pp. 3-8. Moscow. 1945.

9. Barovskiy, V. V.
ZHUKI SEMEYSTVA LYCIDAE (COLEOPTERA) (Beetles of the family Lycidae (Coleoptera)). Izd. Akad. Nauk., 27 pp. Moscow-Leningrad. 1931.

10. Beklemishev, W. N.
O SRAVNITEL'NOM IZUCHENII ZHIZNENYKH KROVOSOSUSHCHIKH CHLENISTONOGIKH (Comparative study of life histories of bloodsucking arthropods). Medits. Parazitol. i Parazitarn. Bolezni, vol. 11, No. 3, pp. 39-44. Moscow. 1942.

11. Ben, E. E.
TUBERKULEZNAYA SMERTNOST V LENINGRADE ZA 50 LET (Tuberculosis mortality in Leningrad during 50 years). Leningr. Tuberk. Inst., 71 pp. Leningrad. 1934.

12. Berlin, A. L.
KRATKOE RUKOVODSTVO PO BORBE S CHUMOY (Short guide for plague control). "Medgiz," 76 pp. Moscow. 1944.

13. Bilmanis, A.
BALTIC STATES IN POST-WAR EUROPE. Press Bureau of Latvian Legation, Washington. 1943.

14. Biryukov, V. I.
ZARAZHENOST PARAZITOM MALYARII PODVIDA "ANOPHELES MACULIPENNIS MESSEAE" (To what extent is *Anopheles maculipennis messeae* infected with malaria parasites?). Vrachebnoe Delo, No. 5, pp. 261-264. Moscow. 1945.

15. Blakhov, A. A. and Kuptsova, A. D.
TRANSPORTOVKA MALAYARYYNYKH KOMAROV PARAKHODAMI (Transportation of malaria mosquitoes by vessels). Medits. Parazitol. i Parazitarn. Bolezni, vol. 9, pp. 508-510. Moscow. 1940.

16. BOLSHAYA MEDITSINSKAYA ENTSIKLOPEDIYA (Large Medical Encyclopedia), vol. 4, pp. 159-214 (1928); vol. 16, pp. 578-694 (1931); vol. 31, pp. 467-670 (1935); vol. 32, pp. 182-236 (1935). Moscow, Soviet Encyclopedia Publishing House. 1928-1935.

17. Bush, W. A.
BOTANIKO-GEOGRAFICHESKIY OCHERK EVROPEYSKOY CHASTI SSSR (Botanical and geographical outline of the European part of the U.S.S.R.) Izd. Akad. Nauk., 192 pp. Moscow-Leningrad. 1935.

18. Cazeneuve. H. J.
ORGANISATION OF THE PUBLIC HEALTH SERVICES IN LATVIA. League of Nations Health Organisation. 71 pp. Geneva. 1925.

19. Chinaev, P. P.
MATERIYALY K METODIKE KOLICHISTVENNOGO UCHETA LICHINOK ANOPHELES (Materials for a method of counting of Anopheles larvae). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 1, pp. 35-48. Moscow. 1944.

20. Chumakov, M. P., Mironov, V. S., Petrova, S. P., Orlova, M. N. and Shluger, E. G.
IZUCHENIE ULTRAVIRUSNYKH ENTSELFALITOV. SOOBSHCHENIE IV. ZARAZHENOST VIRUSOM ENTSEFALITA KLESHCHEY "IXODES PERSULCATUS" SCH. RAZNYKH RAYONAKH SSSR (Studies of ultravirus encephalitis. Communication IV. Infection of tick *Ixodes persulcatus* Sch. by the virus in different districts of the U.S.S.R.) Medits. Parazitol i Parazitarn. Bolezni, vol. 13, No. 4, pp. 83-84. Moscow. 1944.

21. Chumakov, M. P. and Naydenova, G. A.
IZUCHENIE ULTRAVIRUSNYKH ENTSEFALITOV. SOOBSHCHENIE V. KLESHCH "IXODES RICINUS" KAK PERENOSCHIK KLESHCHEVOGO (VESENNE-LETNEGO) ENTSEFALITA (Studies of the ultravirus encephalitis. Communication V. *Ixodes ricinus* as a vector of the tick (spring-summer) encephalitis). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 4, pp. 89-92. Moscow. 1944.

22. Cressey, G. B.
GREAT SOVIET WORLD ATLAS. Ann Arbor, Edwards Brothers. 1940.

23. ———
THE BASIS OF SOVIET STRENGTH. 287 pp. London-New York, McGraw-Hill Book Co. 1945.

24. Dawson, P. M.
PHYSICAL CULTURE IN THE SOVIET UNION. Amer. Rev. of Sov. Med., vol. 1, No. 1, pp. 49-61. New York. 1943.

25. Ditmars, R. L.
SNAKES OF THE WORLD. 207 pp., illus. New York, Macmillan Co. 1943.

26. Dobrokhotova, A. I.
PROBLEMA KOKLYUSHA NA DANNOM ETAPE I DAL'NEYSHIA PUTI EE IZUCHENIYA (The problem of whooping cough at the present time and further ways of its study). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 1-2, pp. 8-13. Moscow. 1945.

27. Doerbeck, F.
GESCHICHTE DER PESTEPIDEMIEN IN RUSSLAND (History of plague epidemics in Russia). Breslau. 1906.

28. THE ECONOMICAL, CULTURAL, AND SOCIAL CONSTRUCTIVE WORK OF THE UKRAINE SSR. 100 pp. All-Ukrainian Soc. for Cultural Rel. with Foreign Countries. Kharkov. 1929.

29. Ehrismann, O.
UEBER DIE VERBREITUNG DER INFEKTIONSHRANKHEITEN IN DER UKRAINE (The spread of infectious diseases in the Ukraine). Arch. f. Hyg., vol. 129, pp. 74-107. 1943.

30. Eskin, V. A., Chagin, K. P. and Murovannyy, I. L.
ORGANIZATSIYA PROTIVOKLESHCHEVYKH MEROPRIYATIY V OCHAGAKH KLESHCHEVOGO ENTSEFALITA (Organization of means to control ticks in an area of tick-borne encephalitis). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 1, pp. 78-84. Moscow. 1944.

31. Fastovskaya, E. I.
K VOPROSU O DLITEL'NOSTI TECHENIYA TROPICHESKOY MALYARII V USLOVIYAKH YUZHNOY POLOSY UKRAINY V PERIOD EPIDEMICHESKOY VSPYSHNOSTI (On the question of duration of malaria tropica under the conditions prevalent in southern Ukraine during the period of the epidemic flare-up). Medits. Parazitol. i Parazitarn. Bolezni, vol. 10, No. 2, pp. 179-185. Moscow. 1941.

32. Fride, O. A.
SPUTNIK KHINIZATORA I BONIFAKTORA (Guide for malaria-control personnel). "Medgiz," 124 pp. Moscow. 1940.

33. Gelshtein, E. M. and Zelenin, V. F.
UCHEBNIK CHASTNOY PATOLOGII I TERAPII VNUTRENIKH BOLEZNEY (Textbook on general pathology and therapy of internal diseases). "Medgiz," 654 pp. Moscow-Leningrad. 1942.

34. Girgolav, S. S.
MODERN DATA ON FROSTBITE. Amer. Rev. of Sov. Med., vol. 1, No. 5, pp. 437-440. New York. 1944.

35. Goldfayl, L. and Yakhin, I.
KURORTY SSSR (Resort places in the U.S.S.R.). Gosud. Izd. Moscow-Leningrad. 1928.

36. Goldzilber, E. M.
BORBA S VENERICHESKAMI BOLEZNYAMI V OSVOBOZHDENNYKH RAYONNAKH (Control of venereal diseases in liberated areas). Sovetskoe Zdravookhr, Nos. 10-11, pp. 34-40. Moscow. 1944.

37. Goritskaya, V. V.
EPIDEMIOLOGICHESKOYE ZNACHENIE VESENIKH "A. MACULIPENNIS" MEIG. V USLOVIYAKH DNEPROPETROVSKOY OBLASTI (Epidemiological importance of the *A. maculipennis* Meig. under the conditions of Dnepropetrovsk oblast in spring). Medits. Parazitol. i Parazitarn. Bolezni, vol. 9, No. 5, pp. 500-502. Moscow. 1940.
38. Gromashevskiy, L. V.
OSNOVNYE VOPROSY EPIDEMIOLOGII BRUSHNOGO FIGA; ZADACHI BORBY S NIM (Basic questions of typhoid epidemiology and the tasks of the fight against it). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., No. 5, pp. 1-19. Moscow. 1939.
39. ———
ROL MASSOVOGO IMMUNITETA V EPIDEMIOLOGII SYPNOGO TIFA (Importance of mass immunity in the epidemiology of typhus). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 10-11, pp. 62-69. Moscow. 1943.
40. Guryanova, E. F.
MORSKIE ARKTICHESKIE RAVONOGIE RAKI (ISOPODA) (The isopods of the Arctic Seas). Izd. Akad. Nauk., 181 pp. Moscow-Leningrad. 1932.
41. Hackett, L. W.
MALARIA IN EUROPE. London, Oxford University Press. 1937.
42. Hackett, L. W. and Missiroli, A.
THE VARIETIES OF "A. MACULIPENNIS" AND THEIR RELATIONS TO THE DISTRIBUTION OF MALARIA IN EUROPE. Riv. di Malariologia, vol. 14, pp. 45-109. Rome. 1935.
43. Hoare, C. A.
RECENT MALARIA WORK IN RUSSIA. Trop. Dis. Bull., vol. 40, pp. 345-350. 1943.
44. INSTRUKTSIYA PO MEDIKAMENTOZNOY TERAPII MALYARII (Official instruction on malaria therapy). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 3, pp. 75-83. Moscow. 1944.
45. INSTRUKTSIYA PROTIVOMALYARIYNOGO SOVESHCHENIYA (Official instructions on malaria control). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 3, pp. 70-75. Moscow. 1944.
46. Ivarov. M. M.
SANITARNO-EPIDEMIOLOGICHESKIE STANTSII, IKH KADRY V GODY OTECHESTVENNOY VOYNY I IKH ZADACHI (Sanitary and epidemiological stations, their cadres during World War II, and their tasks). Gigiena i Sanitariya, No. 9, pp. 30-38. Moscow. 1944.
47. Kagan, S. S.
ZBIRNYK ZPYTAN' SANITARNOY STATYSKYKY. (Collection of sanitary statistics). Academy of Sciences of the Ukr. SSR; publications of the demographic institute, vol. 14, publication of the Academy of Sciences of the Ukr. SSR. 325 pp. Kiev. 1938.
48. Kalabukhov, N. I.
DEYSTVIE NEKOTORYKH PREPARATOV PIRETRY NA PLATENYKH VSHEY (Action of certain preparations of pyrethrum on body lice). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 1, pp. 85-87. Moscow. 1944.
49. Kantorovitz, G. M.
RUSSIA'S GROWING POPULATION. Reprint from The Annals of the American Academy of Political and Social Science, pp. 57-63. Philadelphia. 1945.
50. Khatuntsev, I. I., Blakhov, A. A., Kuptsova, A. D.
K VOPROSU O PRIMENENII PARIZHSKOY ZELENI I NEFTI NA RISOVYKH POLYAKH ASTRAKHANSKOGO RAYONA (Use of Paris green and waste oil on the rice fields of the district of Astrakhan). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 2, pp. 61-63. Moscow. 1944.
51. Khodukin, I. I. and Soshnikova, M. N.
VOZBUDITEL (FILTRUYUSHCHIYSYA VIRUS) ODNOY NEIZVESTNOY DO SIKH POR ENTSEFALITA (The agent (filterable virus) of a hitherto unknown form of encephalitis). Nevropatol. i Psikhiatr., No. 2, pp. 14-20. Moscow. 1945.
52. Khvilivitskaya, M. I.
KLINICHESKIYA NABLUDENIYA NAD PELLAGROY V LENINGRADE V 1942. RABOTY LENINGRADSKIKH VRACHEY ZA GOD OTECHESTVENNOY VOYNY VYPUSK TRETIY (Clinical observations on pellagra in Leningrad during 1942. Activities of Leningrad's physicians during one year of World War II, third publication). Narkomzdrav SSSR, pp. 56-73. Leningrad. 1942.
53. Kirzon, M. I.
LECHENIE MALYARII V VOENOM RAYONE (Treatment of malaria in the Russian Army). Sovetsk. Medits., No. 4, pp. 14-15. Moscow. 1943.
54. Klebanov, M. A.
PROTIVOTUBERKULEZNAYA VAKTSINATSIYA V SOVETSKOM SOYUZE (Tuberculosis vaccination in the Soviet Union). Sovetsk. Medits., Nos. 1-2, pp. 29-31. Moscow. 1945.
55. Klyuchikov, V. N.
OSTRYE I KHRONICHESKIE FORMY KLESHCHEVOGO ENTSEFALITA V SEVERO-ZAPADNYKH RAYONAKH SSR (LENINGRADSKAYA OBLAST) (Acute and chronic forms of tick-borne encephalitis in northwestern regions of the U.S.S.R. (Leningrad oblast)). Nevropatol. i Pzikhiatr., No. 2, pp. 52-56. Moscow. 1945.
56. Kolesnikov, S. A.
MEROPRIYATIYA PO BORBE S TUBERKULEZOM V SSSR (Measures in the fight against tuberculosis). Sovetskoe Zdravookhr., Nos. 1-2, pp. 16-27. Moscow. 1945.
57. ———
O MEROPRIYATIYAKH PO BORBE S TUBERKULEZOM V SSSR (On measures taken in tuberculosis control in the U.S.S.R.). Sovetsk. Medits., Nos. 1-2, pp. 1-6. Moscow. 1945.
58. ———
O MEROPRIYATIYAKH PO BORBE S TUBERKULEZOM V SSSR (On measures taken in tuberculosis control in the U.S.S.R.). Problemy Tuberkuleza, No. 1, pp. 3-13. Moscow. 1945.
59. Komarov, V. L.
MATERIALY PO ISTORII FLORY I RASTITELNOSTI SSSR (Materials on the history of the flora and vegetation of the U.S.S.R.). Izd. Akad. Nauk., SSSR, 413 pp. Moscow-Leningrad. 1941.
60. Kononov, V. N.
SANITARNO-GIGIENICHESKAYA OTSENKA PITEVYKH VOD PODZEMNYKH VODOISTOCHNIKOV (Sanitary and hygienic analysis of drinking water from ground-water sources). Gigiena i Sanitariya, No. 6, pp. 4-9. Moscow. 1944.
61. Krotkov, F. G.
RUKOVODSTVO PO VOYENNOY GIGIENE (Manual of military hygiene). Gosud. Medits. Izd., 318 pp. Moscow-Leningrad. 1933.
62. ———
THE USE OF GREASES AND OINTMENTS IN THE PREVENTION OF FROSTBITE. Am. Rev. of Sov. Med., vol. 1, No. 5, pp. 443-447. New York. 1944.
63. Kurashov, S. V.
VOSTANOVLENIA I RASSHIRENIE KUROTNOY POMOSCHCHI (Establishment and development of the health resort places). Sovetskoe Zdravookhr., No. 6, pp. 13-19. Moscow. 1945.
64. Lavrenka, E. M.
MORFOLOGICHESKIE RAZLICHIYA LICHINOK PODVIDOV "A. MACULIPENNIS" MEIG. (Morphological differences in the larvae of subspecies of *A. maculipennis* Meig.). Medits. Parazitol. i Parazitarn. Bolezni, vol. 11, No. 3, pp. 30-39. Moscow. 1942.
65. League of Nations.
SCANDINAVIAN COUNTRIES AND THE BALTIC REPUBLICS. Statistical Handbooks Series: No. 6, 107 pp. League of Nations Health Organisation. Geneva. 1926.
66. ———
LITHUANIA, EUROPEAN CONFERENCE ON RURAL LIFE. League of Nations Publications, C12-M6, 47 pp. League of Nations Health Organisation. Geneva. 1939.
67. ———
LATVIA, EUROPEAN CONFERENCE ON RURAL LIFE. League of Nations Publications, C28-M16, 92 pp. League of Nations Health Organisation. Geneva. 1939.
68. Lebedenko, V. V.
TRAINING OF MEDICAL PERSONNEL IN USSR BEFORE AND DURING THE PRESENT WAR. Jour. Am. Med. Assn., vol. 122, pp. 449-450. Chicago. 1943.
69. Leshkov, B. A.
BRYUSHNOY TIF (Typhoid fever). "Medgiz." Moscow. 1943.
70. Levenson, E. D., Fastovskaya, E. I., Khovanskaya, A. I. and Dukhanina, N. N.
ERADICATION OF A MALARIAL FOCUS IN THE NORTH (Province of Archangel). Am. Rev. of Sov. Med., vol. 1, No. 4, pp. 329-336. New York. 1944.

71. Lukyanchikov, M. Z.
K KLINIKE UKUSA KARAKURTA (On the clinical manifestations of black spider bites). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 2, pp. 72-75. Moscow. 1944.

72. Malyy, I. M.
OPYT LIKVIDATSII TULYAREMII V PRIFRONTOVNOY OBLASTI (Experiences with eradication of tularemia in a region near the front). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., No. 3, pp. 74-77. Moscow. 1945.

73. Maltsev, A. I.
ATLAS VAZHNEYSHIKH VIDOV SORNYKH RASTENIY SSSR (Atlas of the most important weeds in the U.S.S.R.) Gosud. Izd. Kolkhoznoy i Sovkhoznoy Literatury, 166 pp. Moscow-Leningrad. 1937.

74. Manson-Bahr, P. H.
MANSON'S TROPICAL DISEASES; A MANUAL OF THE DISEASES OF WARM CLIMATES. 1083 pp. Baltimore, The Williams & Wilkins Company. 1941.

75. Martini, E. C. W.
BEITRAEGE ZUR MEDIZINISCHEN ENTOMOLOGIE UND ZUR MALARIAEPIDEMIOLOGIC DES UNTERN WOLGAGEBIETS (Contributions to the medical entomology and to the epidemiology of malaria in the lower Volga region). 134 pp. Hamburg. 1928.

76. Mashkilleison, L. N. and Rakhanov, V. A.
VENEREAL DISEASE CONTROL IN THE USSR, Amer. Rev. of Sov. Med., vol. 3, No. 2, pp. 100-105. New York. 1945.

77. Mayskiy, I. N.
O TIPAKH EPIDEMICHESKIKH VSPYSKEK TULYAREMII (On the types of epidemic outbreaks of tularemia). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 7-8, pp. 32-38. Moscow. 1945.

78. ———
TULYAREMIYNYE VSPYSHKI MYSHNOGO PROISKHOZHDENIYA (Tularemia outbreaks originating from mice). Gigiena i Sanitariya, Nos. 7-8, pp. 34-38. Moscow. 1944.

79. Menk, W.
DIE MALARIA ALS VOLKSKRANKHEIT IN RUSSLAND UND IHRE BEKAEMPFUNG (Malaria as a people's disease in Russia and the fight against it). Dtsch. Trop. Ztschr., vol. 46, No. 13, pp. 239-253. 1942.

80. Minkevich, I. E.
OB OSOBENOSTYAKH PRIMENENIYA COLI-TESTS NA YUGE SSSR (Peculiarities of coli-test employment in the south of the U.S.S.R.) Gigiena i Sanitariya, No. 9, pp. 10-14. Moscow. 1944.

81. Mirov, N. T.
TWO CENTURIES OF AFFORESTATION AND SHELTERBELT PLANTING ON THE RUSSIAN STEPPES. Jour. of Forestry, vol. 33, pp. 971-973. 1935.

82. MIROVOE KHOZYAISTVO, EZHEGODNIK (World Economy, Yearbook). 560 pp. Moscow. 1938.

83. Miterev, G. A.
NARODNOE ZDRAVOOKHRANENIE ZA 25 LET SOVETSKOY VLASTI (Protection of people's health in 25 years of Soviet power). "Medgiz," 96 pp. Moscow. 1942.

84. ———
AMBULATORNOPOLIKLINICHESKOE OBSLUZHIVANIE GORODSKOGO NASELENIYA V PERIOD VELIKOY OTECHESTVENNOY VOYNY (Ambulatory and polyclinical service rendered to the city population during World War II). Sovetskoe Zdravookhr., Nos. 10-11, pp. 13-14. Moscow. 1944.

85. ———
PUTI RAZVITIYA RUSSKOY MEDITSINY I EE VKLAD V MIROVUYU NAUKU (Development of Russian medicine and its contribution to world science). Sovetskoe Zdravookhr., Nos. 1-2, pp. 3-15. Moscow. 1945.

86. Moldavskaya, V. D., Levinskaya, B. Z., Goldshteyn, T. A.
OSOBENOSTI TECHENIYA MALARII VOENNOGO VREMENI I SOVREMENNYE METODY LECHENIYA (Peculiarities of the course of malaria during wartime and modern methods of therapy). Vrachebnoe Delo, No. 5, pp. 265-268. Moscow. 1945.

87. Morozovskaya, M. I.
EPIDEMIOLOGICHESKIE OSOBENOSTI VSPYSHKI MALYARII V 1943/44G. PO KHARKOVSKOY OBLASTI I MERY EE LIKVIDATSII (Epidemiologic characteristics of malaria outbreaks in 1943-1944 in the oblast of Kharkov and measures against it). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 2, pp. 13-18. Moscow. 1943-1944.

88. Muserskiy, N. N.
YADOVITYYA RYBY SSSR (Poisonous fishes of the U.S.S.R.) Gigiena i Sanitariya, No. 6, pp. 46-49. Moscow. 1945.

89. Nikitskiy, V. S.
PLAN 1945G. - NOVAYA STUPEN V RAZVITII SOVETSKOGO ZDRAVOOKHRANENIA (Plan for the year 1945 - a new step forward in the development of Soviet health preservation). Sovetsk. Zdravookhr., No. 3, pp. 3-16. Moscow. 1945.

90. Nikolskiy, A. N.
FAUNA ROSSII I SOPREDELNYKH STRAN (ZEMNOVODNYYA) (Fauna of Russia and bordering countries (Amphibia)). Tipografia Rossiyskoy Akad. Nauk., 310 pp. Petrograd (Leningrad). 1918.

91. OBYAZANOST POMOSHCHNIKA ENTOMOLOGA (Duties of the assistant entomologist). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 3, pp. 84-86. Moscow. 1944.

92. Ognev, S. I.
ZVERI SSSR I PRILEZHASHCHIKH STRAN (The mammals of the U.S.S.R. and adjacent countries). Izd. Akad. Nauk. Moscow-Leningrad. 1940.

93. Olenev, N. O.
PARAZITICHESKIYE KLESHCHI IXODOIDEA FAUNY SSSR (Parasite ticks Ixodoidea of the fauna of the U.S.S.R.) Izd. Akad. Nauk., 125 pp. Moscow-Leningrad. 1931.

94. Olsufiev, N. G.
FAUNA SSSR, SEM. TABANIDAE (Fauna of the U.S.S.R., fam. Tabanidae). Azd. Akad. Nauk. Moscow-Leningrad. 1937.

95. Ovchinnikova, L. M.
ISPOLZOVANIE ALBIKHTOLA DLYA BORBE S PLATYANYMI; GOLOVNYMI VSHAMI (Use of "albichtol" for control of head and body lice). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 2, pp. 83-86. Moscow. 1944.

96. ———
PRIMENENIE NEKOTORYKH KOMPLEKSNYKH DUSTOV V BORBE SO VSHIVOSTYU (Application of some complex powders in lice control). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 2, pp. 79-83. Moscow. 1944.

97. Parin, V.
ACCOUNT OF THE WORK OF THE RECENT SESSION OF THE ACADEMY OF MEDICAL SCIENCES, USSR. British Med. Jour., 8 Dec. 1945. 814 pp. London. 1945.

98. Paviovskiy, E. N.
YADOVITYE ZHIVOTNYE SSSR (Poisonous animals of the U.S.S.R.) Gosud, Medits. Izd. Moscow-Leningrad. 1931.

99. ———
KURS PARAZITOLOGII CHELOVEKA (Textbook of human parasitology). "Ogiz." Moscow. 1934.

100. ———
KLESHCHEVOY VOZVRATNYY TIF (Tick-borne relapsing fever). "Medgiz," 79 pp. Moscow. 1944.

101. ———
V POMOCHCH SANITARNO-EPIDEMIOLOGICHESKOY RAZVEDKE ENDEMICHNYKH TRANSMISSIVNYKH BOLEZNEY NA YUGE I V SUBTROPIKAKH (Contribution to the sanitary and epidemiologic survey of transmissible endemic diseases in endemic regions of the south). "Medgiz," 64 pp. Moscow. 1944.

102. Perfiliev, P. P.
FAUNA SSSR, MOSKITY (Fauna of the U.S.S.R., mosquitoes). Izd. Akad. Nauk. Moscow-Leningrad. 1937.

103. Pevzner, M. I.
NAUCHNO-ISSLEDOVATELSKAYA I LECHEBNO-PRAKTICHESKAYA RABOTA KLINIKI LECHEBNOGO PITANIYA INSTITUTA PITANIYA V MOSKVE V PERIOD OTECHESTVENNOY VOYNY (The scientific and research activities and the therapeutic and practical work during World War II of the clinic for therapeutic diet attached to the Institute of Food in Moscow). Sovetskoe Zdravookhr., No. 9, pp. 39-46. Moscow. 1944.

104. Pirumov, K. N.
OPYT BORBY S MALARIEY U N-SKOY (DEYSTVUYUSHCHEY) ARMII U 1943G. (Malaria control in N-(active) army during the year 1943). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 2, pp. 20-25. Moscow. 1944.

105. Pogodina, E. A. and Sokolov, A. G.
ALKALOIDNYE TUMANY V BORBE S KOMARAMI (Alkaloidal fogs for combating mosquitoes). Medits. Parazitol. i Parazitarn. Bolezni, vols. 1-2, No. 9, pp. 109-111. Moscow. 1940.

106. Polumordvinov, A. D.
K VOPROSU O PRIVLICHENII "ANOPHELES MACULIPENNIS" RAZLICHNYMI ZHIVOTNYMI (The attraction of various animals for *Anopheles maculipennis*. Medits. Parazitol. i Parazitarn. Bolezni, vol. 11, No. 4, pp. 61-63. Moscow. 1942.

107. POMOSHOH MESTNYM ORGANAM ZDRAVOOKHRANENIYA (Communications on help to local branches of public health). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 3, pp. 90-92. Moscow. 1944.

108. Prendel', A. R. and Somova, A. A.
OB EPIDEMIOLOGICHESKOM ZNACHENII PODVIDOV "ANOPHELES MACULIPENNIS" (On the epidemiological importance of the subspecies of *Anopheles maculipennis*). Medits. Parazitol. i Parazitarn. Bolezni, vol. 7, No. 16, pp. 360-379. Moscow. 1938.

109. Puchkov, A. S.
25 LET MOSKOVSKOY STANTSII SKOROY POMOSHCHI (25 years of the first-aid station in Moscow). Sovetskoe Zdravookhr., Nos. 1-2 pp. 34-40. Moscow. 1945.

110. Rabukhin, A. E.
BORBA S TUBERKULEZOM VO VREMYA PERVOY I VTOROY MIROVOY VOYNY (Tuberculosis control during World Wars I and II). Sovetsk. Meditsina, Nos. 1-2, pp. 26-29. Moscow. 1945.

111. Rado, A.
DER NEUESTE STAND DER POLITISCH GEOGRAPHISCHEN EINTEILUNG DER SOWJETUNION (The most recent state of the political and geographical subdivision of the U.S.S.R.) Petermanns (Geog.) Mitteilungen, vol. 81, pp. 13-16. Berlin. 1935.

112. Raevskiy, G. E.
PROEKT INSTRUKTSII PO PRIMENENIYU ZOOPROFILAKTIKI MALYARII (Institutions for zooprophylaxis of malaria). Medits. Parazitol. i Parazitarn. Bolezni, vol. 11, No. 4, pp. 64-67. Moscow. 1942.

113. ———
OPYT ZOOPROFILAKTIKI MALYARII V SELENII SHITKHALA, KABARDINO-BALKARSKOY ASSR, 1938-1940 (The influence of zooprophylaxis on malaria in the community of Shitkhala, Kabardino-Balkarskoy A.S.S.R., 1938-1940). Medits. Parazitol. i Parazitarn. Bolezni, vol. 11, No. 4, pp. 11-21. Moscow. 1942.

114. Ravikovidi, E. M. and Mauerman, O. E.
MATERIALY PO EPIDEMIOLOGII DIFTERII I SKARLATINY V GODY VELIKOY OTECHESTVENNOY VOYNY (Material on the epidemiology of diphtheria and scarlet fever during the "Great Patriotic War"). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 1-2, pp. 15-21. Moscow. 1945.

115. Rikman, O. A.
DINAMIKA LETALNOSTI PRI SKARLATINE I DIFTERII (Dynamics of mortality in scarlet fever and diphtheria). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 7-8, pp. 57-64. Moscow. 1939.

116. Rodendorf, B. B.
FAUNA SSSR, SEM. SARCOPHAGIDAE (Fauna of the U.S.S.R., fam. Sarcophagidae). Izd. Akad. Nauk. Moscow-Leningrad. 1937.

117. Rogozin, I. I. and Yakusheva, A. I.
ITOGI 1943G. I PLAN BORBY S MALYARIEY NA 1944G. (Malaria control in 1943 and the plan for 1944). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 3, pp. 1-8. Moscow. 1943-1944.

118. Ronnefeld, F.
ZUR EPIDEMIOLOGIE DER MALARIA IN DER NORDOESTLICHEN UKRAINE (On the epidemiology of malaria in northeastern Ukraine). Tropenhygienische Schriftenreihe, Hipporkates-Verlag Marquardt und Cie., vol. 10, pp. 5-15. Stuttgart. 1943.

119. Ross, E. S. and Roberts, H. R.
MOSQUITO ATLAS: PART I, THE NEARTIC ANOPHELES. Am. Entomol. Soc. Acad. of Nat. Sc., 44 pp. Philadelphia. 1943.

120. ———
MOSQUITO ATLAS: PART II, EIGHTEEN OLD WORLD ANOPHELINES IMPORTANT TO MALARIA. Am. Entomol. Soc. Acad. of Nat. Sc., 44 pp. Philadelphia. 1943.

121. Rossiyskiy, D. M.
K KHARAKTERISTIKE GRIPPOZNOY VSPYSHKI KONTSA 1943G. (Contribution to the characteristic of the grippe outbreak at the end of 1943). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., No. 3, pp. 39-43. Moscow. 1943.

122. Russell, P. F., Rozeboom, L. E. and Stone, A.
KEYS TO THE ANOPHELINE MOSQUITOES OF THE WORLD. Am. Entomol. Soc. Acad. of Nat. Sc., 152 pp. Philadelphia. 1943.

123. Rybinski, S. B.
MATERIAUX CONCERNANTS LA FAUNE DE MOUSTIQUES DE L'UKRAINE DE NORD-OUEST (Data on the mosquito fauna of northwestern Ukraine). Bull. Soc. Zool. Fr., vol. 58, pp. 18-29. Paris. 1933.

124. SBORNIK PRIKAZOV I INSTRUKTSIY NARKOMZDRAVA SSSR (Collection of regulations and instructions of the Narkomzdrav of the U.S.S.R.) "Medgiz," 72 pp. Moscow. 1943.

125. Scott, J. A.
VENEREAL DISEASE IN THE SOVIET UNION. Amer. Rev. of Sov. Med., vol. 2, No. 5, pp. 458-467. New York. 1945.

126. Semashko, N. A.
HEALTH PROTECTION IN THE USSR. London. 1934.

127. Sergiev, R. A.
SBORNIK ORGANIZATSIONNO - METODICHESKIKH MATERIALOV PO BORBE S MALYARIEY I GELMINTOZAMI (Collection of materials connected with organization and methods of malaria and helminth control). "Medgiz," 200 pp. Moscow. 1943.

128. Shabanov, A. N.
VYSSHAYA MEDITSINSKAYA SHKOLA V NOVOM ETAPE (The medical school in the new period). Sovetskoe Zdravookhr., No. 6, pp. 7-13. Moscow. 1945.

129. Shapiro, A. I. and Boyarinova, B. A.
KHARAKTERISTIKA BAKTERIYNOGO BATSILONOSITELSTVA V KRASNOYARSKE ZA 1943G. (The characteristics of bacterial carriers in Krasnoyarsk in 1943). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 1-2, pp. 54-55. Moscow. 1945.

130. Shapiro, S. L., Ter-Abakyan, I. I. and Babayeva, S. N.
K EPIDEMIOLOGII DIFTERII (On the epidemiology of diphtheria). Zurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 1-2, pp. 45-49. Moscow. 1945.

131. Shen, G. T.
PROBLEMA PAKHOVOGO LIMPHOGRANULOMATOZA (BOLEZNI NIKOLA-FAVRA) (The problem of inguinal lymphogranulomatosis (Nicolas-Favre disease)). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 4-5, pp. 76-84. Moscow. 1945.

132. Shimkin, M. B.
MEDICAL EDUCATION IN THE SOVIET UNION. Amer. Rev. of of Sov. Med., vol. 1, No. 5, pp. 465-480. New York. 1944.

133. Shipitsyna, N. K.
K VOPROSU OB EPIDEMIOLOGICHESKOM ZNACHENII OSENNEGO POKOLENIYA "ANOPHELES MACULIPENNIS" V SEVERNOY POLOSE SSSR (Contribution to the epidemiological role of the autumnal increase of "Anopheles maculipennis" in the northern zone of the U.S.S.R.) Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 4, pp. 44-52. Moscow. 1944.

134. Shtakelberg, A. A.
KROVOSOSUSHCHIYE KOMARY PALEARKTIKI (Bloodsucking mosquitoes of the Palearctic). Izd. Akad. Nauk. Moscow-Leningrad. 1937.

135. Shurin, P. N.
O MUCHINOM TIPE VSPYSHKI BRYUSHNOGO TIFA (On the fly-transmitted type of typhoid outbreak). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., No. 6, pp. 24-28. Moscow. 1945.

136. Sigerist, H. E.
SOCIALIZED MEDICINE IN THE SOVIET UNION. 378 pp. New York, W. W. Norton and Co. 1937.

137. ———
TWENTY-FIVE YEARS OF HEALTH WORK IN THE SOVIET UNION. Amer. Rev. of Sov. Med., vol. 1, pp. 67-79. New York. 1943.

138. ———
RURAL HEALTH SERVICES IN THE SOVIET UNION. Amer. Rev. of Sov. Med., vol. 1, No. 3, pp. 270-281. New York. 1944.

139. Skundina, S.
OPYT SANITARNOPROFILAKTICHESKOY RABOTY V GORKOVSKOY OBLASTI V PERVYYE GODY VOYNY (Experiences from prophylactic and sanitary activities in Gorky oblast during the first years of World War II). Gigiena i Sanitariya, Nos. 7-8, pp. 42-46. Moscow. 1944.

140. Smorodintsev, A. A.
TICK-BORNE ENCEPHALITIS. Amer. Rev. of Sov. Med., vol. 1, No. 5, pp. 400-408. New York. 1944.

141. Snezhko, D. S.
EFFEKTIVNOST EZHEGODNOY IMMUNIZATSII PROTIV DIFTERII (Effectiveness of yearly immunization against diphtheria). Sovetsk. Zdravookhr., No. 3, pp. 45-48. Moscow. 1945.

142. ———
EFFEKTIVNOST EZHEGODNOY IMMUNIZATSII PROTIV DIFTERII (Effectiveness of yearly immunization against diphtheria). Zhurn. Mikrobiol., Epidemiol., i Immunobiol., Nos. 1-2, pp. 49-52. Moscow. 1945.

143. SOTSIALISTICHESKOE STROITELSTVO SSSR; STATISTICHESKIY EZHEGODNIK (Socialist construction of the U.S.S.R., statistical yearbook). 690 pp. Moscow. 1935.

144. SSSR STRANA SOTSIALIZMA (STATISTICHESKIY SBORNIK) (U.S.S.R., land of socialism (statistics)). Redaktsionno Izdatelskoye Upravleniye Tsunkhu Gosplana SSSR i u/o "Soyuzorguchet," 211 pp. Moscow. 1936.

145. Strashun, I. D.
RAZVITIE MEDITSINY V ROSSII (The development of medicine in Russia). Bolshaya Meditsinskaya Entsiklopediya, vol. 17, pp. 432-510. Moscow. 1936.

146. Studnitsyn, A. A.
O SOSTOYANII KADROV NAUCHUO-ISSLEDOVATELSKIKH INSTITUTOV NARKOMSDRAVA RSFSR (On the cadres belonging to the scientific and research institutes of the Office of Public Health of the R.S.F.S.R.) Sovetskoe Zdravookhr., Nos. 1-2, pp. 42-46. Moscow. 1945.

147. Sulkevich, S.
NASELENIE SSSR (Population of the U.S.S.R.) "Ogiz," 560 pp. Moscow. 1939.

148. Swellengrebel, N. H.
MALARIA IN THE NETHERLANDS. Amsterdam, Sheltema and Helkema Ltd. 1938.

149. Takhmanova, P. I.
OTSENKA PRIGODNOSTI KHLEVOV RAZNOGO TIPA DLA ZOOPROFILAKTIKI MALYARII I ROL' RAZLICHNYKH DOMASHNIKH ZHIVOTNEKH V KATCHESTVE DOBYIKI KOMAROV "A. MACULIPENNIS" (Evaluation of different types of animal shelters and of various domestic animals as a zooprophylactic barrier against *A. maculipennis*). Medits. Parazitol. i Parazitarn. Bolezni, vol. 11, No. 4, pp. 57-60. Moscow. 1942.

150. Taliev, V. I.
OPREDELITEL VYSSHIKH RASTENIY EVROPEYSKOY CHASTI SSSR (Manual of higher plants in the European part of the U.S.S.R.) Gosud. Izd., 630 pp. Moscow-Leningrad. 1928.

151. Tiburskaya, N. A. and Pravdina, O. L.
IZUCHENIE GAMOSTATISCHESKOGO DEYSTVIYA KOMBINATSII AKRIKHINA S PLAZMOKHINOM I S PLAZMOCIDOM (Gametostatic actions of combinations of akrikhin with plasmochin and plasmocid). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 2, pp. 25-34. Moscow. 1944.

152. UTCHEBNYY PLAN DLYA INSTRUKTUROV BONIFAKTOROV (Training plan for instructors of laborers engaged in malaria control). Medits. Parazitol. i Parazitarn. Bolezni, vol. 13, No. 3, pp. 87-89. Moscow. 1944.

153. Veber, L. G.
ORGANIZATSIYA SANITARNO-PROTIVOEPIDEMICHESKOY RABOTY V OSVOBZHDENNYKH OT OKUPATSII RAYONAKH (Organization of the sanitary and prophylactic work in regions freed after occupation). Gigiena i Sanitariya, Nos. 7-8, pp. 48-54. Moscow. 1944.

154. ———
NASUSHCHNYE ZADACHI BORDY S KISHECHNYMI INFEKTSIYAMI (Primary considerations in the control of intestinal infections). Sovetskoe Zdravookhr., No. 6, pp. 3-6. Moscow. 1944.

155. Vinogradov, B. S.
FAUNA SSSR, SEM. DIPODIDAE (Fauna of the U.S.S.R., fam. Dipodidae). Izd. Akad. Nauk. Moscow-Leningrad. 1937.

156. Vissotsky, G. O.
SHELTERBELTS IN THE STEPPES OF RUSSIA. Jour. of Forestry, vol. 34, pp. 781-788. 1935.

157. U. S. War Department, Office of the Surgeon General, Medical Intelligence Branch.
GEOGRAPHIC DISTRIBUTION OF CERTAIN DISEASES. Pamphlet No. 8-6, 14 pp. U. S. Government Printing Office, Washington. 13 June 1944.

158. Williams, F. E.
SOVIET RUSSIA FIGHTS NEUROSIS. 251 pp. London, George Rutledge and Sons, Ltd. 1934.

159. Wolter, F.
DIE MALARIA IN RUSSLAND IN IHRER ABHAENGIGKEIT VON BODEN UND KLIMA (Malaria in Russia and its dependence upon land and climate). 58 pp. Munich. 1930.

160. Yatsenko, F. I. and Tyshchen'ko, O. D.
MATERIYALY K IZUCHENIYU VIDNOSTEY MALYARIYNYK KOMAROV "A. MACULIPENNIS" MG. NA UKRAINE (Materials for studying the appearance of the malaria mosquito *A. maculipennis* Mg. in the Ukraine). Medits. Parazitol. i Parazitarn. Bolezni, vol. 5, No. 4. Moscow. 1936.

161. Yefremov, V. V.
ALIMENTARNO-TOKSICHESKAYA ALEYKIYA (SEPTICHESKAYA ANGINA) Alimentary-toxemia (septic angina)). Gigiena i Sanitariya, Nos. 7-8, pp. 18-25. Moscow. 1944.

162. Zaporozhenko, A .Y.
PROTIVOEPIDEMICHESKAYA RABOTA SANITARNO-EPIDEMIOLOGICHESKIKH STANTSIY, SANITARNYKH UCHASTKOV, AMBULATORIY I POLIKLINIK (Anti-epidemic activities of the sanitary and epidemiological stations, sanitary districts, ambulatories, and polyclinics). Gigiena i Sanitariya, Nos. 10-11, pp. 44-46. Moscow. 1944.

163. ZDROVE I ZDRAVOOKHRANENIE TRUDYASHCHIKHSYA SSR (Health and preservation of health of the working people of the U.S.S.R.) Redaktsionno-Izdatelskoye Upravl. Tsunkhu Gosplana SSSR i u/o "Soyuzorguchet," 221 pp. Moscow. 1936.

164. Zilboorg, G.
SOME ASPECTS OF PSYCHIATRY IN THE U.S.S.R. Amer. Rev. of Sov. Med., vol. 1, No. 6, pp. 562-575. New York. 1944.

165. Zumpt, F. and Minning, W.
DER FLUGZEUGEINSATZ IN DER MEDIZINISCHEN SCHAEDLINGSBEKAEMPFUNG (Use of airplanes in vector control). Dtsch. Trop. Ztschr., vol. 47, Nos. 13-14, pp. 360-369. Leipzig. 1943.

166. ———
MALARIABEKAEMPFUNG IN DER UKRAINE (Fight against malaria in the Ukraine). Dtsch. Trop. Ztschr., vol. 47, No. 9, pp. 205-215; No. 10, pp. 237-241; No. 11, pp. 265-283. Leipzig. 1943.

OTHER SOURCES

In addition to the materials listed above, interviews with people who have lived in various parts of Russia and data on file in the Medical Intelligence Branch, Preventive Medicine Division, Office of The Surgeon General, U. S. War Department, were used in preparing this chapter.

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